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CLAIMS

[Claim(s)]

[Claim 1] The voice input means for inputting voice, and the recognition means which makes the high thing of a coincidence degree a recognition result as compared with two or more comparison object-pattern candidates beforehand memorized by the dictionary means in the voice inputted through this voice input means, A user specification means to specify a user by comparing the recognition result by this recognition means with the identification information for every user registered beforehand, When a user is specified by storage means to memorize the study result of having corresponded for two or more users of every, and said user specification means The information processor characterized by having a processing activation means to read the study result corresponding to the specified user from said storage means, and to perform predetermined information processing based on the read study result.

[Claim 2] The predetermined information processing which said processing activation means performs in an information processor according to claim 1 is an information processor characterized by being the speech recognition processing which used said voice input means and the recognition means.

[Claim 3] In an information processor according to claim 1, the predetermined information processing which said processing activation means performs It is navigation processing. Said voice input means It is used in order that a user may input with voice directions of predetermined navigation processing associated data with the need of being specified when said processing activation means carries out navigation processing at least. The information processor characterized by said processing activation means performing navigation processing based on the recognition result by said speech recognition means.

[Claim 4] It has a characteristic quantity extract means to extract further the acoustical characteristic quantity of the user voice inputted through said voice input means in an information processor according to claim 1 to 3. While said user specification means compares the recognition result by said recognition means with the identification information for every user registered beforehand The information processor characterized by specifying a user by measuring the acoustical characteristic quantity extracted by said characteristic quantity extract means with the acoustical characteristic quantity for every user registered beforehand.

[Claim 5] The fingerprint reading means for reading the fingerprint set to predetermined image reading within the limits, A user specification means to specify a user by comparing the image of a fingerprint read through this fingerprint reading means with the registered image of the fingerprint for every user registered beforehand, When a user is specified by storage means to memorize the study result of having corresponded for two or more users of every, and said user specification means The information processor characterized by having a processing activation means to read the study result corresponding to the specified user from said storage means, and to perform predetermined information processing based on the read study result.

[Claim 6] The predetermined image reading range for said fingerprint reading means to read a fingerprint in an information processor according to claim 5 is an information processor characterized by making fingerprint reading possible when it is prepared in the steering wheel of a car and a user grasps

the steering wheel concerned.

[Claim 7] It is the information processor [claim 8] characterized by deciding said specific candidate's user as a specific user when a predetermined definite reference is made through an information means after it reported identifiable information for a specific candidate's user and the user was reported to identifiable information by this information means before said user specification means specified said user in the information processor according to claim 1 to 6. The information processor characterized by being carried in the car in an information processor according to claim 1 to 7.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the technique which enabled it to specify a user simply, when two or more users use the same information processor especially about the information processor which performs suitable information processing using the study result based on the use situation of a user's past.

[0002]

[Description of the Prior Art] Before, the technique in which two or more users raise convenience by making a setup about the mounted equipment etc. automatic in the condition that presetting was carried out, a premise [using the same car] is known. For example, since a sheet position changes considerably with a user's forms etc., it is adjusted to the position which was most suitable for itself by manual actuation first. And if the adjusted position is matched and registered into either of the pattern selection keys of the number of 1-3 and the registered pattern selection key is operated to next utilization time, it will be automatically adjusted to the sheet position of the request by which presetting was carried out. Moreover, since the optimal location changes with a user's forms and above-mentioned sheet positions also about the position of a mirror, it is convenient if you register similarly. However, since it is another pattern setup when he tries to use after that after others register freely another pattern into the number which had to try all the key strokes when he had forgotten the number which he registered, and he registered, when such a pattern selection key is used, it will not become a desired sheet position or a desired mirror position.

[0003] On the other hand, in the car which adopted the so-called keyless entry system equipment, some kinds of keys are prepared and the technique which changes the presetting memory of ODIA equipment based on ID of the key which unlocked the door is put in practical use. Therefore, if two or more users using the same car own a respectively different key and unlock by the key, various setup which matched themselves is realizable.

[0004]

[Problem(s) to be Solved by the Invention] However, in this way, by setup based on ID of a key, when two or more users use the same key, a setup for every user cannot be realized. Moreover, since a setup is decided by the key which unlocked the door, when a spare key is used, for example, it may not become a setup which a user desires.

[0005] These problems originated in not specifying the user directly and specifying indirectly through ID of a key, and are generated. Then, by certainly specifying a user based on the information acquired from the user in a utilization time point itself, this invention solves an above-mentioned problem and aims at planning efficiency when predetermined information processing based on the study result corresponding to the specified user is performed.

[0006]

[The means for solving a technical problem and an effect of the invention] When according to the information processor according to claim 1 made in order to attain the above-mentioned purpose the study result of having corresponded to the storage means for two or more users of every is memorized and a user is specified by the user specification means, a processing effective means reads the study result corresponding to the specified user from a storage means, and the predetermined information processing based on the read study result performs. Since it is adjusted to the position for which it was most suitable for every user when it applies as equipment which follows, for example, carries out regulating automatically of the sheet position and mirror position of a car, convenience improves.

[0007] And the user specification means of this invention specifies a user as follows. That is, after making the high thing of a coincidence degree into a recognition result as compared with two or more comparison object-pattern candidates beforehand memorized by the dictionary means in the voice inputted through the voice input means, a user is specified by comparing this recognition result with the identification information for every user registered beforehand. Here, if a user's own identifier is

registered as a user's ID, a user can do user specification very simple that what is necessary is just to utter its identifier.

[0008] It compares with the conventional technique. For example, in what is registered by the pattern selection key etc., after others registered freely another pattern into the number which had to try all the key strokes when he had forgotten the number which he registered, and he registered, when he tries to use after that, it will become another pattern setup. Moreover, if it is going to correspond to many users, the pattern selection key for the user must be prepared, and a limit of an installation etc. also must be taken into consideration. Moreover, in a setup based on ID of the key which unlocked the door of a car, when two or more users use the same key, a setup for every user cannot be realized. Moreover, since a setup is decided by the key which unlocked the door, when a spare key is used, for example, it may not become a setup which a user desires.

[0009] On the other hand, since he is trying to utter his identifier etc. as user identification information which the user registered according to the user specification technique of this invention, it is very rare to use the identification information which has forgotten the registered identification information or others registered accidentally. Moreover, even if it is the case where it is targeted at many users, there is no hard increment like an above-mentioned pattern selection key, and its data of the user identification information to register only increase. Furthermore, it does not produce un-arranging ["it cannot be made a desired setup"], when the key of the case where two or more users use the same key, or a reserve is used, either. That is, the problem in the case of the conventional technique originated in not specifying the user directly and specifying indirectly through ID of a key, and is generated. Since the user was certainly specified based on the information acquired from the user in a utilization time point itself by this invention to it, these problems can be solved and efficiency when predetermined information processing based on the study result corresponding to the specified user is performed can be planned.

[0010] In addition, it being equipped with an input unit like a ten key, for example, although the above-mentioned pattern selection key explained that the increment in the number of keys itself became a problem with the increment in the number of users since one ID was a thing corresponding to one key, for example, deciding the ID number whose user is about 4 figures to be arbitration, and registering is also considered. However, ID which the activity of pushing 4 times is needed, and can register a ten key in this case serves as only a figure. With, of course devising an input procedure, although the kana input using a ten key is also possible, it becomes a very complicated input. If it is the contents which require only actuation of uttering user identification information simply, and can be uttered also about such a point if it is the case of this invention, since anythings can serve as identification information, it is not restricted to a figure.

[0011] In addition, many things are considered as an application place as an information processor. The some are explained. For example, it is also realizable as a voice recognition unit whose predetermined information processing which a processing activation means performs is speech recognition processing using a voice input means and a recognition means. Since there is the description on speech recognition for every user, if this is learned, effectiveness, such as improvement in a recognition rate, will be acquired in the case of next speech recognition. In this case, it is realizable only with the configuration which it originally has as a voice recognition unit.

[0012] Moreover, an information processor is also realizable as navigation equipment. In this case, the predetermined information processing which a processing activation means performs is navigation processing. And a voice input means is used in order that a user may input with voice directions of predetermined navigation processing associated data with the need of being specified when a processing activation means carries out navigation processing at least, and based on the recognition result by the speech recognition means, a processing activation means performs navigation processing. Since a setup for every user is possible for the destination, a registration point, the conditions of voice guidance, or the language (Japanese or English) of a screen display, if it can do immediately by the optimal use environment, its convenience will improve based on such setting hysteresis. Moreover, since it is premised on inputting navigation processing associated data, such as a setup of the destination, with voice also in this case, it is not necessary to add a configuration new for user specification.

[0013] It is realizable also as adjustment of the sheet position mentioned above besides it, or a mirror position, and equipment which performs adjustment of a steering position further. Furthermore, it is applicable to an engine control system, an automatic gear change control unit, etc. as well as the change of the presetting memory of audio equipment. It is because being based on a study result is desirable in order the treading-in condition of an accelerator etc. is characteristic for every user and to be able to perform suitable engine control according to these differences.

[0014] Moreover, although these functions may be realized independently, you may realize as equipment which unified two or more functions. since two or more above-mentioned equipments consist of in the car [LAN] etc. possible [a communication link] mutually especially as mounted equipment in many cases, it is convenient, if it constitutes as a system, and each equipment is resembled, it sets and it can be made to perform a setup for every specified user.

[0015] In the above explanation, when a user did voice input of the user identification information, the user was specified. In this case, since the point which makes simple actuation which a user should mainly perform for user specification is noted, for example, even if it is the case where others do voice input of their user identification information freely, the study result for itself will be called. Furthermore, if updated by the others' study result, when he uses again, desired processing will be performed after that. Therefore, the following works can also be carried out in view of this point. That is, the acoustical characteristic quantity of the user voice inputted through the voice input means is extracted, and it is made to be based also on the comparison result of this extracted acoustical characteristic quantity and the acoustical characteristic quantity for every user registered beforehand in the case of user specification. If it does in this way, even if others will do voice input of their user identification information, its study result will be called freely, or it will not be updated, and will be effective also in respect of security.

[0016] By the way, if it carries out from a viewpoint of being based on a user's unique bodily features, like above-mentioned acoustical characteristic quantity, a fingerprint can be identified, for example and a user can also be specified. That is, the fingerprint set to predetermined image reading within the limits is read, and a user is specified by comparing the read image of a fingerprint with the registered image of the fingerprint for every user registered beforehand. Processing of Ushiro who specified is the same as that of the case where it is based on the voice mentioned above. That is, the study result of having corresponded to the storage means for two or more users of every is memorized, a processing effective means reads the study result corresponding to the specified user from a storage means, and predetermined information processing based on the read study result is performed.

[0017] When based on a fingerprint, in order for a user to bring his finger to the predetermined image reading range and to make a fingerprint read, when it carries an information processor in a car, and the predetermined image reading range is established in the steering wheel of a car and a user grasps a steering wheel, it is desirable that fingerprint reading constitutes possible. Thus, while being able to specify a user certainly and simple also in the user specification by the fingerprint, it is effective also in respect of security.

[0018] In addition, when a predetermined definite reference is made after it reported identifiable information for a specific candidate's user and the user was reported to identifiable information by the information means through the information means, you may make it a user specification means decide a specific candidate's user as a specific user, before specifying a user however it may be the case where user specification is carried out. Since it may be unable to be called 100% from the point of the recognition precision when making user identification information input with voice especially, it is desirable to acquire the check by the user finally.

[0019] It is possible to perform this user by outputting the contents of a predetermined speech generation device for example, to the recognition result with voice about the information of identifiable information. Since a driver does not need to shift a view to a display if outputted with voice when using as objects for mounted devices, such as a car-navigation system, it can be said that it is advantageous in respect of much more reservation of a safety operation. However, it may carry out by displaying the contents of the recognition result on the display which can display an alphabetic character or a notation

on a screen instead of what is limited to a voice output by the image with an alphabetic character or a notation, or you may make it report by both voice and the image, and the technique of the information of those other than these may be adopted. When applying as a mounted device, it said that a voice output is advantageous, but since there is also a situation in which a car is not running, of course, if it reports by both voice and the image, both the check by display and the check of a driver with voice will be attained.

[0020] Moreover, it is possible to input the language which shows the affirmative contents like "yes" with voice too as a predetermined definite reference, or to operate a predetermined actuation switch. In addition, for example, not only the mounted equipment mentioned above as an application place of the information processor of this invention but pocket mold navigation equipment -- or you may use for a setup of a personal computer etc.

[0021]

[Embodiment of the Invention] Hereafter, the example to which this invention was applied is explained using a drawing. In addition, as long as the gestalt of operation of this invention belongs to the technical range of this invention, without being limited to the following example in any way, it cannot be overemphasized that various gestalten can be taken.

[1st example] drawing 1 is the block diagram showing the outline configuration of the multi-media system as an example. This multi-media system is carried in a car, and is constituted as a system which controls or processes information synthetically about other image display, other telephone equipment or audio equipments, etc. using media including navigation, such as a map display, transit guidance, etc. using map data.

[0022] Through communication link Rhine 40, it connects mutually and, specifically, multimedia ECU 10, the indicating equipment 15 with a touch switch, TEL-ECU51, the TV tuner 52, audio equipment 53, ECU54 for sheet justification, ECU55 for steering justification, ECU56 for mirror justification, and an engine ECU 57 and ECT-ECU58 are constituted.

[0023] While a position transducer 4, the map data input machine 6, and the actuation switch group 8 are connected and inputting the data from these, I/O of data is made to be made to multimedia ECU 10 (equivalent to the processing activation means of this invention) also between voice recognition units 30. Moreover, it can be made to perform I/O of data also between the indicating equipments 15 with a touch switch mentioned above. In addition, multimedia ECU 10 is equipped with navigation control-section 10a and multimedia control-section 10b, and each of these is constituted as a usual computer equipped with the bus line which connects CPU, ROM, RAM, well-known I/O, and these well-known. And navigation control-section 10a becomes the subject who performs navigation-related processing, and multimedia control-section 10b becomes the subject who specifically performs processing relevant to the other media, TEL-ECU51 mentioned above, the TV tuner 52, audio equipment 53, ECU54 for sheet justification, ECU55 for steering justification, ECU56 for mirror justification, an engine ECU 57, and ECT-ECU58.

[0024] Said position transducer 4 has GPS receiver 22 for GPS (Global Positioning System) which all detects the location of a car based on the well-known gyroscope 18, a distance robot 20, and the electric wave from a satellite. 18, 20, and 22, such as these sensors, are constituted so that it may use it by two or more sensors, interpolating respectively, since each has a different error of a property. In addition, you may constitute from some Uchi mentioned above depending on precision, and the rotation sensor of a steering, the wheel sensor of each rolling ring, etc. may be used further.

[0025] The map data input machine 6 is equipment for inputting the various data containing the so-called data for map matching, map data, and mark data for the improvement in precision of location detection. Although it is common as a medium to use CD-ROM and DVD from the amount of data, other media, such as a memory card, may be used.

[0026] The indicating equipment 15 with a touch switch is equipped with the touch switch 12 which the infrared radiation which is running in all directions [screen] the number of predetermined is intercepted, pinpoints the pushed area, and demonstrates a switch function, and the display ECU 13 and the LCD monitor 14 which manages control of the whole indicating equipment if a screen is touched

with a finger. Color display is possible for the LCD monitor 14, and it can display in piles the car current position mark inputted from the position transducer 4, the map data inputted from the map data input machine 6, and addition data, such as an induction path further displayed on a map, and a mark of the setting point mentioned later, on the screen. Although this is the operation as navigation equipment, it enables it to display the television imagery of the channel tuned in, for example with the TV tuner 52 etc.

[0027] Moreover, the actuation switch group 8 is a mechanical switch which has been arranged around the display 15 with a touch switch in the case of this example (or in [the case of a display] one), and is used for selection of the mainly used media. Specifically, it is a switch for choosing a desired thing out of various media, such as navigation, a telephone, television, an audio, an air-conditioner, and CD.

[0028] And a voice recognition unit 30 is equipment for directing the destination etc. similarly to being used in order that the above-mentioned actuation switch group 8 may direct the destination etc. by manual operation, when a user inputs with voice. The configuration of a voice recognition unit 30 is further explained with reference to drawing 2.

[0029] This voice recognition unit 30 is equipped with the speech recognition section 31 (equivalent to the recognition means of this invention), the dialogue control section 32, the speech synthesis section 33, the voice input section 34, the microphone 35 (equivalent to the voice input means of this invention), the PTT (Push-To-Talk) switch 36, the loudspeaker 37, and the PTT switch control section 38.

[0030] The speech recognition section 31 performs recognition processing of input voice for the voice data inputted from the voice input section 34 with the directions from the dialogue control section 32, and returns the recognition result to the dialogue control section 32. That is, it collates to the voice data acquired from the voice input section 34 using the memorized dictionary data, and the high high order comparison object pattern of whenever [coincidence] is outputted to the dialogue control section 32 as compared with two or more comparison object-pattern candidates. Recognition of the word sequence in input voice carries out sonagraphy of the voice data inputted from the voice input section 34 one by one, extracts acoustical characteristic quantity (for example, cepstrum), and obtains the acoustical characteristic quantity time series data obtained by this sonagraphy. And it asks for which word in which these time series data were divided into some sections, and each section was stored by DP matching method, well-known HMM (hidden Markov model), or a well-known neural network etc. as dictionary data is supported.

[0031] The dialogue control section 32 performs processing it is directed that the destination required for navigation processing is notified as opposed to the multimedia ECU 10 which performs utterance directions of the answer tone voice from the internal state which the recognition result and self manage to the speech synthesis section 33, and processing of the system itself, and performs setting processing. Such processing is definite after treatment, and as a result, if this voice recognition unit 30 is used, even if it does not carry out hand control of the above-mentioned actuation switch group 8, directions of the destination for navigation etc. will be attained by voice input. Moreover, not the destination directions for navigation but when a user does voice input of his user identification information so that it may mention later, it can be made to perform user specification based on the user identification information.

[0032] Moreover, the voice input section 34 changes into digital data the voice of the perimeter incorporated with the microphone 35, and outputs it to the speech recognition section 31. In this operation gestalt, while a user pushes the PTT switch 36, it is the operation of inputting voice through a microphone 35. The control section 38 is specifically supervising the time amount which the timing on which the PTT switch 36 was pushed, the returned timing, and the condition of having been pushed continued, and when the PTT switch 36 is pushed, activation of processing is directed to the voice input section 34. On the other hand, when the PTT switch 36 is not pushed, it is not made not to perform the processing. Therefore, while the PTT switch 36 is pushed, the voice data inputted through the microphone 35 will be outputted to the speech recognition section 31. Moreover, there is no voice input in being constituted so that the judgment result of whether it is the voice section in the voice input section 34 or to be the noise section may also be inputted into a control section 38, for example, the PTT switch 36 having been pushed, and it also enables it to judge that the condition is carrying out

predetermined time continuation.

[0033] Here, the speech recognition section 31 and the dialogue control section 32 are further explained with reference to drawing 3. As shown in drawing 3, the speech recognition section 31 consists of collating section 31a and dictionary section 31b, and the dialogue control section 32 consists of storage section 32a, input section 32b, and after-treatment section 32c. The character-string data which identify the user corresponding to user ID as information about a user are memorized by storage section 32a of the dialogue control section 32. Moreover, the past study result is also memorized for every user ID. The character-string data which identify a user are a user's identifiers (a main name is sufficient and nickname etc. is sufficient.), and this is equivalent to the user identification information of this invention. Although user ID is information used in common into this system and is mentioned later in detail, it is made to have the contents of a setting in each ECUs 51-58 registered for every user ID of this. For example, what is necessary is just to carry out using the number of 1-10 etc.

[0034] In the speech recognition section 31, collating section 31a collates to the voice data acquired from the voice input section 34 using the dictionary data memorized in dictionary section 31b. Moreover, if it judges whether the character-string data for user specification corresponding to the collated result are memorized by storage section 32a and memorizes when performing processing which specifies user ID, the user ID corresponding to the character-string data for user specification will be outputted to the after-treatment section 32. Moreover, it enables it to carry out the external input of the input section 32b in the user ID from multimedia ECU 10, and the inputted user ID is also memorized by storage section 32a.

[0035] And when the above-mentioned predetermined definite reference is made in after-treatment section 32c, for example, processing directed to perform "definite after treatment" it is directed that data are sent to multimedia ECU 10 and carries out predetermined processing, or to send voice data to the speech synthesis section 33, and to make it pronounce is performed.

[0036] It enables it to memorize the telephone number which return and TEL-ECU51 are equipment for controlling a telephone function, for example, was made to have registered into configuration explanation of drawing 1 in the past as a telephone directory function. Moreover, it enables it to be set as liking of it also about a ringer tone. And these can be made a setup by the ringer tone which could read the telephone number made to memorize and was made to memorize, if the contents of a setting are memorized for every user ID and the user ID is specified. That is, since these contents of a setting differ for every user, the contents of a setting are registered per user, and since it is desirable that it can occasionally be used [which is the need], it is doing in this way.

[0037] Moreover, the TV tuner 52 is equipment for carrying out channel selection reception of the television broadcasting signal, and it is made to have the broadcast signal of a predetermined frequency assigned to the so-called presetting memory. And those contents of a setting are memorized for every user ID also about this presetting memory, and if that user ID is specified, the contents of the presetting memory made to memorize can be read. That is, if the number of the registered presetting memory is specified, it will enable it to receive the corresponding television broadcasting signal of a broadcasting station. Moreover, it memorizes also about the broadcasting station (or frequency of ****) which was being used at the end last time. In addition, this television imagery that received can be displayed on the LCD monitor 14 of a display 15.

[0038] It is the same as that of the TV tuner 52 also about audio equipment 53. That is, the information which pinpoints the broadcasting station used at the end the contents of a setting of presetting memory and last time for every user ID is memorized. Moreover, ECU54 for sheet justification, ECU55 for steering justification, and ECU56 for mirror justification are equipment for adjusting sheet positions (an order location, height, the include angle of a back board, location of a headrest, etc.), steering positions (a tilt angle, height, etc.), and mirror positions (include angle of a right-and-left door mirror and a reflector glass etc.), respectively. And the contents of a setting are memorized for every user ID, and if the user ID is specified, it enables it to be adjusted to the position made to memorize about these positions.

[0039] Moreover, if the past study result is memorized for every user ID and the user ID is specified also

about these, it will enable it to perform the suitable engine control or automatic gear change control based on the study result made to memorize, although an engine ECU 57 and ECT-ECU58 are the things of the common knowledge as an electronic control which performs engine control and automatic gear change control, respectively. In addition, if it is engine control, it is more desirable for these study results to start the amendment control which mainly took the difference in accelerator actuation into consideration for every user, and to also change the contents of control about fuel injection or ignition timing, even if the degree which breaks in an accelerator is the same accelerator opening in a large user and a small user relatively. moreover, it is more desirable for the degree which similarly breaks in an accelerator to also change relatively the contents of control which boil and attach the change timing of a gear ratio etc. by the large user and the small user also in automatic gear change control.

[0040] In addition, supplementary information is carried out about navigation control-section 10a of Uchi of multimedia ECU 10. When the same directions are made from the dialogue control section 32 to navigation control-section 10a, the following processings carry out by carrying out voice input of the menu which it wishes to have through a voice recognition unit 30 when a driver chooses path information-display processing from the menu displayed on the LCD monitor 14 by the actuation switch group 8 in order to display a guidance path on the LCD monitor 14 in using a navigation function through a microphone 35. That is, if a driver inputs the destination by actuation of voice or the actuation switch group 8 based on the map on the LCD monitor 14, the present location of a car will be called for based on the data of the satellite obtained from GPS receiver 22, cost count will be carried out with a Dijkstra method between the destination and a its present location, and processing which searches for the most short-distance path from a its present location to the destination as an induction path will be performed. And an induction path is displayed on the road map on the LCD monitor 14 in piles, and it shows the voice guidance about an intersectional enlarged display or the crossing at which it should turn etc. to the suitable root for a driver. The computation which searches for such an induction path, and guidance processing are the processings generally known well. Moreover, it enables it to be freely set up about the conditioning and the language which carries out a screen display of this voice guidance (for example, Japanese or English etc.). furthermore, the destination -- if it is made to register in addition to this, a user can make arbitration carry out point registration about a convenient point And if it enables it to make the contents of a setting memorized for every user ID and the user ID is specified, it will enable it to perform processing from the contents of a setting made to memorize about a registration point including these destinations, or the conditions of voice guidance.

[0041] Next, actuation of the multi-media system with the configuration explained above of this example is explained. First, system-wide actuation is explained roughly. If the ignition switch which is not illustrated is operated and the current supply from a mounted dc-battery begins, in each part of others including multimedia ECU 10 and a voice recognition unit 30, it will become power-source ON, and an initialization process etc. will be performed, respectively. And although mentioned later in detail, in a voice recognition unit 30, predetermined user recognition processing is performed and user ID is notified to multimedia ECU 10 as the recognition result.

[0042] By multimedia ECU 10, it reads from the storage section in which navigation control-section 10a does not illustrate the contents of a setting corresponding to the notified user ID, and it sets up so that navigation control based on the read contents of a setting can be performed. That is, it considers as the condition that control which used the voice guidance and screen-display language which were mentioned above, a registration point, etc. is performed.

[0043] Moreover, it is directed that multimedia control-section 10b of multimedia ECU 10 notifies the user ID notified from the voice recognition unit 30 to each ECUs 51-58, and considers as a setup corresponding to the user ID. Therefore, in each ECUs 51-58 which received the directions, it reads from the storage section which does not illustrate the contents of a setting corresponding to the notified user ID, and correspondence processing based on the read contents of a setting is performed.

Specifically by tele-ECU51, a ringer tone setup which can use now the telephone directory function corresponding to the notified user ID, and is memorized corresponding to user ID is made. Moreover, in the TV tuner 52 or audio equipment 53, it is made a setup of the presetting memory corresponding to the

notified user ID, and the broadcasting station used further at the end last time is chosen automatically. Moreover, in ECU54 for sheet justification, ECU55 for steering justification, and ECU56 for mirror justification, it adjusts to the position corresponding to the notified user ID. Moreover, in an engine ECU 57 and ECU58, the suitable engine control or automatic gear change control based on the study result corresponding to the notified user ID will be performed.

[0044] Thus, user ID needs to be notified from a voice recognition unit 30 as a premise by which suitable control based on user ID is performed in each part. Therefore, processing concerning the user specification in this voice recognition unit 30 is explained with reference to drawing 4 and 5.

[0045] If current supply is started and this processing begins, the count n of a check will be first reset to 0 (S110), and processing to which a voice guide is made to output from a loudspeaker 37 will be performed (S120). Here, the dialogue control section 32 directs that the predetermined contents of a guide (for example, "it is please about a user name") carry out [voice] a synthetic output in the speech synthesis section 33. After outputting a voice guide in S120, it judges [whether the PTT switch 36 was turned on in S130, and] whether it is no (were pushed?). This judgment is made by the control section 38.

[0046] And when the PTT switch 36 is turned on, it judges whether voice input occurs by (S130:YES) and S140 continuing. Although it shifts to S230 of (S140:YES) and drawing 5 when voice input occurs, the processing after these S230 is mentioned later.

[0047] On the other hand, when there is no voice input, it judges whether (S140:NO) and the PTT switch 36 were turned off (S150), and when the PTT switch 36 is turned off, it returns to (S150:YES) and S130. On the other hand, the PTT switch 36 is not turned off, that is, if it continues being in the turned-on condition (S150:NO), it will judge (whether predetermined time passed) for whether it is a time-out (S160).

[0048] In not being a time-out, it waits to return to (S160:NO) and S140 and to carry out voice input, but when predetermined time passes and it becomes a time-out, it shifts to (S160:YES) and S170, and the increment ($n=n+1$) of the count n of a check is carried out.

[0049] In addition, although there was a voice guide output (S120), when the PTT switch 36 is not turned on, it judges (whether predetermined time passed) for whether they are (S130:NO) and a time-out (S220), and when it is not a time-out, it returns to (S220:NO) and S130. On the other hand, when predetermined time passes and it becomes a time-out, it shifts to (S220:YES) and S170, and the increment ($n=n+1$) of the count n of a check is carried out.

[0050] After incrementing the count n of a check in S170, when the count n of a check judges whether the regular count N of an upper limit was exceeded and is not over the count N of an upper limit in S180 continuing, it returns to (S180:NO) and S120. That is, a voice guide output is performed again and it waits for the voice input from a user. On the other hand, when the count n of a check is over the count N of an upper limit (i.e., when only the count N of an upper limit performed the voice guide output and does not have **** and the voice input from a user from having waited for the voice input from a user, either), it shifts to (S180:YES) and S190, and user ID "1" is chosen. This user ID "1" is prepared in order that an unspecified user may use in common. Therefore, in the talk back performed in S200 continuing, synthesized speech which is referred to as "Making it a setup for unspecified users", for example is outputted from a loudspeaker 37, and it reports to a user.

[0051] And user ID "1" is notified from the dialogue control section 32 to multimedia ECU 10 (S210), and this manipulation routine is ended. Then, processing of S230 which shifts when there is affirmative judgment, i.e., voice input, in S140 mentioned above or subsequent ones is explained.

[0052] Recognition processing to the inputted voice is performed in S230. Although this speech recognition processing is performed in the speech recognition section 31, specifically, it collates to the acquired voice data using the dictionary data memorized. And it will output to the dialogue control section 32 by making into a recognition result the high order comparison object pattern which became settled by the collating result.

[0053] In S240 continuing, the talk back of the recognition result is carried out. That is, the result which the dialogue control section 32 controlled the speech synthesis section 33, and has recognized is made to

output from a loudspeaker 37 with voice. Then, it judges whether it is right recognition in S250. This is judged according to the directions from a user. That is, although a user does voice input of his user name, he judges whether the contents by which the talk back was carried out are the same as the user name which carried out voice input. And when it is right recognition, if it is the wrong recognition, it is possible [it / a user does voice input of "yes" from a microphone 35, and] to be made to carry out voice input of "no." Of course, you may make it input these directions through the actuation switch group 8. [0054] And if it is the mistaken recognition (S250:NO), it will return to S170 of drawing 2 , but in being right recognition, it shifts to (S250:YES) and S260, and decides a recognition result. And in S270-S360 continuing, settled contents, i.e., the processing which specifies user ID based on a user ID name, are performed.

[0055] Specifically, the user name by which voice input was carried out first judges whether it is a new thing. As mentioned above, the character-string data of the user name corresponding to user ID are memorized as information about a user by storage section 32a in the dialogue control section 32. Of course, the user name needs to be set up to no user ID. Moreover, as mentioned above, since user ID "1" is wide opened for the unspecified user, it corresponds and does not memorize a user name. It follows, for example, there is user ID of 1-10, and if it is being able to perform registration of a user name about nine user ID of 2-10, if it is either, negative judgment will be carried out in S270, and if the user names by which voice input was carried out are not any, either, affirmative judgment of them will be carried out to the inside of the nine user names in S270.

[0056] If the user name by which voice input was carried out is either of the nine user names (S270:NO), it will be decided that it will be the user ID corresponding to the user name (S280), and the user ID will be notified to multimedia ECU 10 (S290). This manipulation routine is ended after this notice. On the other hand, if the user names by which voice input was carried out are not any of Uchi of the nine user names, either (S270:YES), it will judge continuously whether new registration is possible (S300). For example, if registration of a user name can be performed about nine user ID of 2-10, it will judge by whether user name registration is carried out about all the nine user ID. When new registration can be carried out, the user name by which voice input was carried out is newly registered to the user ID which is not registered [(S300:YES) and / its]. In addition, what is necessary is just to make choosing the one where the number of them is younger etc., when there is two or more non-registered user ID. And the talk back of the newly registered purport is carried out, and it reports to a user (S320). This information is made to output from a loudspeaker 37 in "user name OOO was newly registered" etc. and synthesized speech. Moreover, new registration is notified to multimedia ECU 10 (S330). This notice is performed including the newly registered user ID.

[0057] On the other hand, when new registration cannot be carried out, (S300:NO) and the same processing as S190-S210 which were mentioned above are performed. That is, synthesized speech which is referred to as "Making it a setup for unspecified users since new registration cannot be performed", for example is outputted from a loudspeaker 37, and the talk back which chooses the user ID "1" which shifted to S310 and was prepared for [unspecified] users, and performs it in S320 continuing reports to a user. And user ID "1" is notified from the dialogue control section 32 to multimedia ECU 10 (S330), and this manipulation routine is ended.

[0058] Thus, since user ID is notified when processing of S290 or S360 is performed, by navigation control-section 10a of the multimedia ECU 10 which received this notice, it reads from the storage section which does not illustrate the contents of a setting corresponding to the notified user ID, and it sets up so that navigation control based on those read contents of a setting can be performed. Therefore, when the user ID according to the user name into which self is registered in S290 is notified, control which used the voice guidance conditions and screen-display language which were being used last time, a registration point, etc. can be performed.

[0059] Moreover, since the directions considered as a setup corresponding to the notified user ID are taken out from multimedia control-section 10b of multimedia ECU 10 to each ECUs 51-58, in each ECUs 51-58 which received the directions, it reads from the storage section which does not illustrate the contents of a setting corresponding to the notified user ID, and correspondence processing based on the

read contents of a setting is performed. Therefore, when the user ID according to the user name into which self is registered in S290 is notified, a setup only for itself is made in each ECUs 51-58. That is, in TEL-ECU51, the telephone directory function only for itself can be used, and a ringer tone setup for itself is made. Moreover, in the TV tuner 52 or audio equipment 53, it is set as the presetting memory for itself, and the broadcasting station used further at the end last time is chosen automatically. Moreover, it is automatically adjusted to the position suitable for itself by ECU54 for sheet justification, ECU55 for steering justification, and ECU56 for mirror justification. Moreover, in an engine ECU 57 and ECT-ECU58, the suitable engine control or automatic gear change control corresponding to a peculiarity of operation of it is performed.

[0060] Moreover, after carrying out a setup for user ID "1", for example as a default setup, modification or the contents of study of the various setup is made memorized in navigation control-section 10a of multimedia ECU 10 from now on corresponding to the user ID for new registration to which it was notified, when the notice of the new registration in S330 is given. Moreover, similarly, the newly registered user ID is specified also from multimedia control-section 10b of multimedia ECU 10 to each ECUs 51-58, and directions of new registration are made to them. Therefore, after carrying out a setup for user ID "1" as a default setup, modification or the contents of study of the various setup is made memorized about Self ECU from now on in each ECUs 51-58 which received the directions corresponding to the user ID for new registration to which it was notified.

[0061] The following effectiveness is demonstrated in the multi-media system of this example explained above. That is, since what is necessary is just to carry out voice input of its user name which the user has registered in order to consider as the thing only for [a navigation function or the contents of processing in various kinds 51-ECUs 58] themselves, user specification can be performed very simple. As compared with the conventional technique, it is as follows concretely. For example, in what is registered by the pattern selection key etc., after others registered freely another pattern into the number which had to try all the key strokes when he had forgotten the number which he registered, and he registered, when he tries to use after that, it will become another pattern setup. Moreover, if it is going to correspond to many users, the pattern selection key for the user must be prepared, and a limit of an installation etc. also must be taken into consideration. Moreover, in a setup based on ID of the key which unlocked the door of a car, when two or more users use the same key, a setup for every user cannot be realized. Moreover, since a setup is decided by the key which unlocked the door, when a spare key is used, for example, it may not become a setup which a user desires.

[0062] On the other hand, since according to the user specification technique like this example it can be set as a user name corresponding to the user ID which the user registered as its identifier etc. is uttered, if compared with the conventional thing which keeps only the number in mind, it is very rare [it] to use the user name for others in forgetting a user name **** accidentally. Moreover, even if it is the case where it is targeted at many users, there is no hard increment like an above-mentioned pattern selection key, and its data of the user name to register only increase. Furthermore, it does not produce unarranging ["it cannot be made a desired setup"], when the key of the case where two or more users use the same key, or a reserve is used, either. That is, the problem in the case of the conventional technique originated in not specifying the user directly and specifying indirectly through ID of a key, and is generated. Since the user was certainly specified to it based on the information (that is, user name in which a user does voice input) acquired from the user in a utilization time point itself in the case of this example, these problems are solvable.

[0063] In addition, it being equipped with an input unit like a ten key, for example, although the above-mentioned pattern selection key explained that the increment in the number of keys itself became a problem with the increment in the number of users since one ID was a thing corresponding to one key, for example, deciding the ID number whose user is about 4 figures to be arbitration, and registering is also considered. However, ID which the activity of pushing 4 times is needed, and can register a ten key in this case serves as only a figure. With, of course devising an input procedure, although the kana input using a ten key is also possible, it becomes a very complicated input. If it is the contents which can carry out voice input that what is necessary is just to carry out voice input of the user name simply if it is the

case of this example, since anythings can serve as a user name also about such a point, it is not restricted to a figure.

The [2nd example] In the 1st above-mentioned example, when a user did voice input of the user name, the user was specified. In this case, since the point which makes simple actuation which a user should mainly perform for user specification is noted, for example, even if it is the case where others do voice input of their user identification information freely, the study result for itself will be called. Furthermore, if updated by the others' study result, when he uses again, desired processing will be performed after that.

[0064] Therefore, the following works can also be carried out if an example is taken in this point. That is, it judges whether only the character-string data of a user name are not memorized, but it memorizes to storage section 32a of the dialogue control section 32 to the acoustical characteristic quantity corresponding to the user name in which voice input was done by the user, the acoustical characteristic quantity of the user name by which voice input was carried out itself is extracted to it in the case of user specification, and it is in agreement with it as compared with the extracted acoustical characteristic quantity and the acoustical characteristic quantity of the user name registered beforehand. If it does in this way, even if others will do voice input of their user name, its study result will be called freely, or it will not be updated, and will be effective also in respect of security.

The [3rd example] In the 2nd above-mentioned example, we decided to perform user specification based on the unique bodily features of a user called acoustical characteristic quantity. If it carries out from this viewpoint, a fingerprint can be identified, for example and a user can also be specified. A user's fingerprint is theoretically registered like the case of the voice in the 2nd above-mentioned example, in the case of user specification, a user's fingerprint is read and a user is specified by comparing with the registered image of the fingerprint registered beforehand. In this case, in order for a user to bring his finger to the predetermined image reading range and to make a fingerprint read, for example, when that predetermined image reading range is established in the steering wheel of a car and a user grasps a steering wheel, it is desirable that fingerprint reading constitutes possible. Thus, while being able to specify a user certainly and simple also in the user specification by the fingerprint, it is effective also in respect of security.

[Others]

(1) Also when registering newly in the case of the 1st example mentioned above, the user was doing voice input of the user name. However, it is also considered by operating the touch switch 12 of the actuation switch group 8 or an indicating equipment 15 that a user can be made to carry out new registration of the user name. For example, in new register mode, a text input screen is displayed on the LCD monitor 14 of a display 15, and "reading" of a user name is inputted on the screen. The character-string data of this user name are sent to the dialogue control section 32 of a voice recognition unit 30 through multimedia ECU 10, and the user name inputted through input section 32b as shown in drawing 3 is memorized to storage section 32a in the dialogue control section 32. It is more desirable to have registered that user name into the forward type, when the talk back of that user name was carried out through a loudspeaker 37 also in this case, it reported to a user and a user operated a check (it is a depression about a confirmation key).

[0065] (2) Moreover, when the system started, although [in the case of the 1st above-mentioned example / when an ignition switch is turned on that is,] processing of user specification is performed, also in the timing of the arbitration which a system starts and is performing the usual processing, it is made to perform user specification processing by carrying out predetermined actuation, for example. For example, the very thing which changes a driver, without an engine stopping is also because it should make a setup which suited the changed driver in that case for a certain reason.

[0066] (3) Moreover, in the case of the 1st example of the above, after carrying out user specification with a voice recognition unit 30, navigation control-section 10a of multimedia ECU 10 and various kinds 51-ECUs 58 were set as the target considered as a setup corresponding to the specified user, but you may combine with any one of the Uchi of navigation control-section 10a and various kinds 51-ECUs 58. Furthermore, voice recognition unit 30 the very thing may also be made a setup which uses

the study result according to a user. That is, since effectiveness, such as improvement in a recognition rate, will be acquired on the occasion of speech recognition if the description for every user is learned, implementation is possible also as voice recognition unit 30 simple substance.

[Translation done.]

TECHNICAL FIELD

[Field of the Invention] This invention relates to the technique which enabled it to specify a user simply, when two or more users use the same information processor especially about the information processor which performs suitable information processing using the study result based on the use situation of a user's past.

[Translation done.]

PRIOR ART

[Description of the Prior Art] Before, the technique in which two or more users raise convenience by making a setup about the mounted equipment etc. automatic in the condition that presetting was carried out, a premise [using the same car] is known. For example, since a sheet position changes considerably with a user's forms etc., it is adjusted to the position which was most suitable for itself by manual actuation first. And if the adjusted position is matched and registered into either of the pattern selection keys of the number of 1-3 and the registered pattern selection key is operated to next utilization time, it will be automatically adjusted to the sheet position of the request by which presetting was carried out. Moreover, since the optimal location changes with a user's forms and above-mentioned sheet positions also about the position of a mirror, it is convenient if you register similarly. However, since it is another pattern setup when he tries to use after that after others register freely another pattern into the number which had to try all the key strokes when he had forgotten the number which he registered, and he registered, when such a pattern selection key is used, it will not become a desired sheet position or a desired mirror position.

[0003] On the other hand, in the car which adopted the so-called keyless entry system equipment, some kinds of keys are prepared and the technique which changes the presetting memory of ODIA equipment based on ID of the key which unlocked the door is put in practical use. Therefore, if two or more users using the same car own a respectively different key and unlock by the key, various setup which matched themselves is realizable.

[Translation done.]

EFFECT OF THE INVENTION

[The means for solving a technical problem and an effect of the invention] When according to the information processor according to claim 1 made in order to attain the above-mentioned purpose the study result of having corresponded to the storage means for two or more users of every is memorized and a user is specified by the user specification means, a processing effective means reads the study result corresponding to the specified user from a storage means, and the predetermined information processing based on the read study result performs. Since it is adjusted to the position for which it was most suitable for every user when it applies as equipment which follows, for example, carries out regulating automatically of the sheet position and mirror position of a car, convenience improves.

[0007] And the user specification means of this invention specifies a user as follows. That is, after making the high thing of a coincidence degree into a recognition result as compared with two or more comparison object-pattern candidates beforehand memorized by the dictionary means in the voice inputted through the voice input means, a user is specified by comparing this recognition result with the identification information for every user registered beforehand. Here, if a user's own identifier is registered as a user's ID, a user can do user specification very simple that what is necessary is just to utter its identifier.

[0008] It compares with the conventional technique. For example, in what is registered by the pattern selection key etc., after others registered freely another pattern into the number which had to try all the key strokes when he had forgotten the number which he registered, and he registered, when he tries to use after that, it will become another pattern setup. Moreover, if it is going to correspond to many users, the pattern selection key for the user must be prepared, and a limit of an installation etc. also must be taken into consideration. Moreover, in a setup based on ID of the key which unlocked the door of a car, when two or more users use the same key, a setup for every user cannot be realized. Moreover, since a setup is decided by the key which unlocked the door, when a spare key is used, for example, it may not become a setup which a user desires.

[0009] On the other hand, since he is trying to utter his identifier etc. as user identification information which the user registered according to the user specification technique of this invention, it is very rare to use the identification information which has forgotten the registered identification information or others registered accidentally. Moreover, even if it is the case where it is targeted at many users, there is no hard increment like an above-mentioned pattern selection key, and its data of the user identification information to register only increase. Furthermore, it does not produce un-arranging ["it cannot be made a desired setup"], when the key of the case where two or more users use the same key, or a reserve is used, either. That is, the problem in the case of the conventional technique originated in not specifying the user directly and specifying indirectly through ID of a key, and is generated. Since the user was certainly specified based on the information acquired from the user in a utilization time point itself by this invention to it, these problems can be solved and efficiency when predetermined information processing based on the study result corresponding to the specified user is performed can be planned.

[0010] In addition, it being equipped with an input unit like a ten key, for example, although the above-mentioned pattern selection key explained that the increment in the number of keys itself became a problem with the increment in the number of users since one ID was a thing corresponding to one key, for example, deciding the ID number whose user is about 4 figures to be arbitration, and registering is also considered. However, ID which the activity of pushing 4 times is needed, and can register a ten key in this case serves as only a figure. With, of course devising an input procedure, although the kana input using a ten key is also possible, it becomes a very complicated input. If it is the contents which require only actuation of uttering user identification information simply, and can be uttered also about such a point if it is the case of this invention, since anythings can serve as identification information, it is not restricted to a figure.

[0011] In addition, many things are considered as an application place as an information processor. The some are explained. For example, it is also realizable as a voice recognition unit whose predetermined information processing which a processing activation means performs is speech recognition processing

using a voice input means and a recognition means. Since there is the description on speech recognition for every user, if this is learned, effectiveness, such as improvement in a recognition rate, will be acquired in the case of next speech recognition. In this case, it is realizable only with the configuration which it originally has as a voice recognition unit.

[0012] Moreover, an information processor is also realizable as navigation equipment. In this case, the predetermined information processing which a processing activation means performs is navigation processing. And a voice input means is used in order that a user may input with voice directions of predetermined navigation processing associated data with the need of being specified when a processing activation means carries out navigation processing at least, and based on the recognition result by the speech recognition means, a processing activation means performs navigation processing. Since a setup for every user is possible for the destination, a registration point, the conditions of voice guidance, or the language (Japanese or English) of a screen display, if it can do immediately by the optimal use environment, its convenience will improve based on such setting hysteresis. Moreover, since it is premised on inputting navigation processing associated data, such as a setup of the destination, with voice also in this case, it is not necessary to add a configuration new for user specification.

[0013] It is realizable also as adjustment of the sheet position mentioned above besides it, or a mirror position, and equipment which performs adjustment of a steering position further. Furthermore, it is applicable to an engine control system, an automatic gear change control unit, etc. as well as the change of the presetting memory of audio equipment. It is because being based on a study result is desirable in order the treading-in condition of an accelerator etc. is characteristic for every user and to be able to perform suitable engine control according to these differences.

[0014] Moreover, although these functions may be realized independently, you may realize as equipment which unified two or more functions. since two or more above-mentioned equipments consist of in the car [LAN] etc. possible [a communication link] mutually especially as mounted equipment in many cases, it is convenient, if it constitutes as a system, and each equipment is resembled, it sets and it can be made to perform a setup for every specified user.

[0015] In the above explanation, when a user did voice input of the user identification information, the user was specified. In this case, since the point which makes simple actuation which a user should mainly perform for user specification is noted, for example, even if it is the case where others do voice input of their user identification information freely, the study result for itself will be called. Furthermore, if updated by the others' study result, when he uses again, desired processing will be performed after that. Therefore, the following works can also be carried out in view of this point. That is, the acoustical characteristic quantity of the user voice inputted through the voice input means is extracted, and it is made to be based also on the comparison result of this extracted acoustical characteristic quantity and the acoustical characteristic quantity for every user registered beforehand in the case of user specification. If it does in this way, even if others will do voice input of their user identification information, its study result will be called freely, or it will not be updated, and will be effective also in respect of security.

[0016] By the way, if it carries out from a viewpoint of being based on a user's unique bodily features, like above-mentioned acoustical characteristic quantity, a fingerprint can be identified, for example and a user can also be specified. That is, the fingerprint set to predetermined image reading within the limits is read, and a user is specified by comparing the read image of a fingerprint with the registered image of the fingerprint for every user registered beforehand. Processing of Ushiro who specified is the same as that of the case where it is based on the voice mentioned above. That is, the study result of having corresponded to the storage means for two or more users of every is memorized, a processing effective means reads the study result corresponding to the specified user from a storage means, and predetermined information processing based on the read study result is performed.

[0017] When based on a fingerprint, in order for a user to bring his finger to the predetermined image reading range and to make a fingerprint read, when it carries an information processor in a car, and the predetermined image reading range is established in the steering wheel of a car and a user grasps a steering wheel, it is desirable that fingerprint reading constitutes possible. Thus, while being able to

specify a user certainly and simple also in the user specification by the fingerprint, it is effective also in respect of security.

[0018] In addition, when a predetermined definite reference is made after it reported identifiable information for a specific candidate's user and the user was reported to identifiable information by the information means through the information means, you may make it a user specification means decide a specific candidate's user as a specific user, before specifying a user however it may be the case where user specification is carried out. Since it may be unable to be called 100% from the point of the recognition precision when making user identification information input with voice especially, it is desirable to acquire the check by the user finally.

[0019] It is possible to perform this user by outputting the contents of a predetermined speech generation device for example, to the recognition result with voice about the information of identifiable information. Since a driver does not need to shift a view to a display if outputted with voice when using as objects for mounted devices, such as a car-navigation system, it can be said that it is advantageous in respect of much more reservation of a safety operation. However, it may carry out by displaying the contents of the recognition result on the display which can display an alphabetic character or a notation on a screen instead of what is limited to a voice output by the image with an alphabetic character or a notation, or you may make it report by both voice and the image, and the technique of the information of those other than these may be adopted. When applying as a mounted device, it said that a voice output is advantageous, but since there is also a situation in which a car is not running, of course, if it reports by both voice and the image, both the check by display and the check of a driver with voice will be attained.

[0020] Moreover, it is possible to input the language which shows the affirmative contents like "yes" with voice too as a predetermined definite reference, or to operate a predetermined actuation switch. in addition, for example, not only the mounted equipment mentioned above as an application place of the information processor of this invention but pocket mold navigation equipment -- or you may use for a setup of a personal computer etc.

[0021]

[Embodiment of the Invention] Hereafter, the example to which this invention was applied is explained using a drawing. In addition, as long as the gestalt of operation of this invention belongs to the technical range of this invention, without being limited to the following example in any way, it cannot be overemphasized that various gestalten can be taken.

[Translation done.]

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, in this way, by setup based on ID of a key, when two or more users use the same key, a setup for every user cannot be realized. Moreover, since a setup is decided by the key which unlocked the door, when a spare key is used, for example, it may not become a setup which a user desires.

[0005] These problems originated in not specifying the user directly and specifying indirectly through ID of a key, and are generated. Then, by certainly specifying a user based on the information acquired from the user in a utilization time point itself, this invention solves an above-mentioned problem and aims at planning efficiency when predetermined information processing based on the study result corresponding to the specified user is performed.

[Translation done.]

EXAMPLE

[1st example] drawing 1 is the block diagram showing the outline configuration of the multi-media system as an example. This multi-media system is carried in a car, and is constituted as a system which controls or processes information synthetically about other image display, other telephone equipment or audio equipments, etc. using media including navigation, such as a map display, transit guidance, etc. using map data.

[0022] Through communication link Rhine 40, it connects mutually and, specifically, multimedia ECU 10, the indicating equipment 15 with a touch switch, TEL-ECU51, the TV tuner 52, audio equipment 53, ECU54 for sheet justification, ECU55 for steering justification, ECU56 for mirror justification, and an engine ECU 57 and ECT-ECU58 are constituted.

[0023] While a position transducer 4, the map data input machine 6, and the actuation switch group 8 are connected and inputting the data from these, I/O of data is made to be made to multimedia ECU 10 (equivalent to the processing activation means of this invention) also between voice recognition units 30. Moreover, it can be made to perform I/O of data also between the indicating equipments 15 with a touch switch mentioned above. In addition, multimedia ECU 10 is equipped with navigation control-section 10a and multimedia control-section 10b, and each of these is constituted as a usual computer equipped with the bus line which connects CPU, ROM, RAM, well-known I/O, and these well-known. And navigation control-section 10a becomes the subject who performs navigation-related processing, and multimedia control-section 10b becomes the subject who specifically performs processing relevant to the other media, TEL-ECU51 mentioned above, the TV tuner 52, audio equipment 53, ECU54 for sheet justification, ECU55 for steering justification, ECU56 for mirror justification, an engine ECU 57, and ECT-ECU58.

[0024] Said position transducer 4 has GPS receiver 22 for GPS (Global Positioning System) which all detects the location of a car based on the well-known gyroscope 18, a distance robot 20, and the electric wave from a satellite. 18, 20, and 22, such as these sensors, are constituted so that it may use it by two or more sensors, interpolating respectively, since each has a different error of a property. In addition, you may constitute from some Uchi mentioned above depending on precision, and the rotation sensor of a steering, the wheel sensor of each rolling ring, etc. may be used further.

[0025] The map data input machine 6 is equipment for inputting the various data containing the so-called data for map matching, map data, and mark data for the improvement in precision of location detection. Although it is common as a medium to use CD-ROM and DVD from the amount of data, other media, such as a memory card, may be used.

[0026] The indicating equipment 15 with a touch switch is equipped with the touch switch 12 which the infrared radiation which is running in all directions [screen] the number of predetermined is intercepted, pinpoints the pushed area, and demonstrates a switch function, and the display ECU 13 and the LCD monitor 14 which manages control of the whole indicating equipment if a screen is touched with a finger. Color display is possible for the LCD monitor 14, and it can display in piles the car current position mark inputted from the position transducer 4, the map data inputted from the map data input machine 6, and addition data, such as an induction path further displayed on a map, and a mark of the setting point mentioned later, on the screen. Although this is the operation as navigation equipment, it enables it to display the television imagery of the channel tuned in, for example with the TV tuner 52 etc.

[0027] Moreover, the actuation switch group 8 is a mechanical switch which has been arranged around the display 15 with a touch switch in the case of this example (or in [the case of a display] one), and is used for selection of the mainly used media. Specifically, it is a switch for choosing a desired thing out of various media, such as navigation, a telephone, television, an audio, an air-conditioner, and CD.

[0028] And a voice recognition unit 30 is equipment for directing the destination etc. similarly to being used in order that the above-mentioned actuation switch group 8 may direct the destination etc. by manual operation, when a user inputs with voice. The configuration of a voice recognition unit 30 is further explained with reference to drawing 2.

[0029] This voice recognition unit 30 is equipped with the speech recognition section 31 (equivalent to the recognition means of this invention), the dialogue control section 32, the speech synthesis section 33, the voice input section 34, the microphone 35 (equivalent to the voice input means of this invention), the PTT (Push-To-Talk) switch 36, the loudspeaker 37, and the PTT switch control section 38.

[0030] The speech recognition section 31 performs recognition processing of input voice for the voice data inputted from the voice input section 34 with the directions from the dialogue control section 32, and returns the recognition result to the dialogue control section 32. That is, it collates to the voice data acquired from the voice input section 34 using the memorized dictionary data, and the high high order comparison object pattern of whenever [coincidence] is outputted to the dialogue control section 32 as compared with two or more comparison object-pattern candidates. Recognition of the word sequence in input voice carries out sonagraphy of the voice data inputted from the voice input section 34 one by one, extracts acoustical characteristic quantity (for example, cepstrum), and obtains the acoustical characteristic quantity time series data obtained by this sonagraphy. And it asks for which word in which these time series data were divided into some sections, and each section was stored by DP matching method, well-known HMM (hidden Markov model), or a well-known neural network etc. as dictionary data is supported.

[0031] The dialogue control section 32 performs processing it is directed that the destination required for navigation processing is notified as opposed to the multimedia ECU 10 which performs utterance directions of the answer tone voice from the internal state which the recognition result and self manage to the speech synthesis section 33, and processing of the system itself, and performs setting processing. Such processing is definite after treatment, and as a result, if this voice recognition unit 30 is used, even if it does not carry out hand control of the above-mentioned actuation switch group 8, directions of the destination for navigation etc. will be attained by voice input. Moreover, not the destination directions for navigation but when a user does voice input of his user identification information so that it may mention later, it can be made to perform user specification based on the user identification information.

[0032] Moreover, the voice input section 34 changes into digital data the voice of the perimeter incorporated with the microphone 35, and outputs it to the speech recognition section 31. In this operation gestalt, while a user pushes the PTT switch 36, it is the operation of inputting voice through a microphone 35. The control section 38 is specifically supervising the time amount which the timing on which the PTT switch 36 was pushed, the returned timing, and the condition of having been pushed continued, and when the PTT switch 36 is pushed, activation of processing is directed to the voice input section 34. On the other hand, when the PTT switch 36 is not pushed, it is not made not to perform the processing. Therefore, while the PTT switch 36 is pushed, the voice data inputted through the microphone 35 will be outputted to the speech recognition section 31. Moreover, there is no voice input in being constituted so that the judgment result of whether it is the voice section in the voice input section 34 or to be the noise section may also be inputted into a control section 38, for example, the PTT switch 36 having been pushed, and it also enables it to judge that the condition is carrying out predetermined time continuation.

[0033] Here, the speech recognition section 31 and the dialogue control section 32 are further explained with reference to drawing 3. As shown in drawing 3, the speech recognition section 31 consists of collating section 31a and dictionary section 31b, and the dialogue control section 32 consists of storage section 32a, input section 32b, and after-treatment section 32c. The character-string data which identify the user corresponding to user ID as information about a user are memorized by storage section 32a of the dialogue control section 32. Moreover, the past study result is also memorized for every user ID. The character-string data which identify a user are a user's identifiers (a main name is sufficient and nickname etc. is sufficient.), and this is equivalent to the user identification information of this invention. Although user ID is information used in common into this system and is mentioned later in detail, it is made to have the contents of a setting in each ECUs 51-58 registered for every user ID of this. For example, what is necessary is just to carry out using the number of 1-10 etc.

[0034] In the speech recognition section 31, collating section 31a collates to the voice data acquired from the voice input section 34 using the dictionary data memorized in dictionary section 31b.

Moreover, if it judges whether the character-string data for user specification corresponding to the collated result are memorized by storage section 32a and memorizes when performing processing which specifies user ID, the user ID corresponding to the character-string data for user specification will be outputted to the after-treatment section 32. Moreover, it enables it to carry out the external input of the input section 32b in the user ID from multimedia ECU 10, and the inputted user ID is also memorized by storage section 32a.

[0035] And when the above-mentioned predetermined definite reference is made in after-treatment section 32c, for example, processing directed to perform "definite after treatment" it is directed that data are sent to multimedia ECU 10 and carries out predetermined processing, or to send voice data to the speech synthesis section 33, and to make it pronounce is performed.

[0036] It enables it to memorize the telephone number which return and TEL-ECU51 are equipment for controlling a telephone function, for example, was made to have registered into configuration explanation of drawing 1 in the past as a telephone directory function. Moreover, it enables it to be set as liking of it also about a ringer tone. And these can be made a setup by the ringer tone which could read the telephone number made to memorize and was made to memorize, if the contents of a setting are memorized for every user ID and the user ID is specified. That is, since these contents of a setting differ for every user, the contents of a setting are registered per user, and since it is desirable that it can occasionally be used [which is the need], it is doing in this way.

[0037] Moreover, the TV tuner 52 is equipment for carrying out channel selection reception of the television broadcasting signal, and it is made to have the broadcast signal of a predetermined frequency assigned to the so-called presetting memory. And those contents of a setting are memorized for every user ID also about this presetting memory, and if that user ID is specified, the contents of the presetting memory made to memorize can be read. That is, if the number of the registered presetting memory is specified, it will enable it to receive the corresponding television broadcasting signal of a broadcasting station. Moreover, it memorizes also about the broadcasting station (or frequency of ****) which was being used at the end last time. In addition, this television imagery that received can be displayed on the LCD monitor 14 of a display 15.

[0038] It is the same as that of the TV tuner 52 also about audio equipment 53. That is, the information which pinpoints the broadcasting station used at the end the contents of a setting of presetting memory and last time for every user ID is memorized. Moreover, ECU54 for sheet justification, ECU55 for steering justification, and ECU56 for mirror justification are equipment for adjusting sheet positions (an order location, height, the include angle of a back board, location of a headrest, etc.), steering positions (a tilt angle, height, etc.), and mirror positions (include angle of a right-and-left door mirror and a reflector glass etc.), respectively. And the contents of a setting are memorized for every user ID, and if the user ID is specified, it enables it to be adjusted to the position made to memorize about these positions.

[0039] Moreover, if the past study result is memorized for every user ID and the user ID is specified also about these, it will enable it to perform the suitable engine control or automatic gear change control based on the study result made to memorize, although an engine ECU 57 and ECT-ECU58 are the things of the common knowledge as an electronic control which performs engine control and automatic gear change control, respectively. In addition, if it is engine control, it is more desirable for these study results to start the amendment control which mainly took the difference in accelerator actuation into consideration for every user, and to also change the contents of control about fuel injection or ignition timing, even if the degree which breaks in an accelerator is the same accelerator opening in a large user and a small user relatively. moreover, it is more desirable for the degree which similarly breaks in an accelerator to also change relatively the contents of control which boil and attach the change timing of a gear ratio etc. by the large user and the small user also in automatic gear change control.

[0040] In addition, supplementary information is carried out about navigation control-section 10a of Uchi of multimedia ECU 10. When the same directions are made from the dialogue control section 32 to navigation control-section 10a, the following processings carry out by carrying out voice input of the menu which it wishes to have through a voice recognition unit 30 when a driver chooses path

information-display processing from the menu displayed on the LCD monitor 14 by the actuation switch group 8 in order to display a guidance path on the LCD monitor 14 in using a navigation function through a microphone 35. That is, if a driver inputs the destination by actuation of voice or the actuation switch group 8 based on the map on the LCD monitor 14, the present location of a car will be called for based on the data of the satellite obtained from GPS receiver 22, cost count will be carried out with a Dijkstra method between the destination and a its present location, and processing which searches for the most short-distance path from a its present location to the destination as an induction path will be performed. And an induction path is displayed on the road map on the LCD monitor 14 in piles, and it shows the voice guidance about an intersectional enlarged display or the crossing at which it should turn etc. to the suitable root for a driver. The computation which searches for such an induction path, and guidance processing are the processings generally known well. Moreover, it enables it to be freely set up about the conditioning and the language which carries out a screen display of this voice guidance (for example, Japanese or English etc.). furthermore, the destination -- if it is made to register in addition to this, a user can make arbitration carry out point registration about a convenient point And if it enables it to make the contents of a setting memorized for every user ID and the user ID is specified, it will enable it to perform processing from the contents of a setting made to memorize about a registration point including these destinations, or the conditions of voice guidance.

[0041] Next, actuation of the multi-media system with the configuration explained above of this example is explained. First, system-wide actuation is explained roughly. If the ignition switch which is not illustrated is operated and the current supply from a mounted dc-battery begins, in each part of others including multimedia ECU 10 and a voice recognition unit 30, it will become power-source ON, and an initialization process etc. will be performed, respectively. And although mentioned later in detail, in a voice recognition unit 30, predetermined user recognition processing is performed and user ID is notified to multimedia ECU 10 as the recognition result.

[0042] By multimedia ECU 10, it reads from the storage section in which navigation control-section 10a does not illustrate the contents of a setting corresponding to the notified user ID, and it sets up so that navigation control based on the read contents of a setting can be performed. That is, it considers as the condition that control which used the voice guidance and screen-display language which were mentioned above, a registration point, etc. is performed.

[0043] Moreover, it is directed that multimedia control-section 10b of multimedia ECU 10 notifies the user ID notified from the voice recognition unit 30 to each ECUs 51-58, and considers as a setup corresponding to the user ID. Therefore, in each ECUs 51-58 which received the directions, it reads from the storage section which does not illustrate the contents of a setting corresponding to the notified user ID, and correspondence processing based on the read contents of a setting is performed. Specifically by tele-ECU51, a ringer tone setup which can use now the telephone directory function corresponding to the notified user ID, and is memorized corresponding to user ID is made. Moreover, in the TV tuner 52 or audio equipment 53, it is made a setup of the presetting memory corresponding to the notified user ID, and the broadcasting station used further at the end last time is chosen automatically. Moreover, in ECU54 for sheet justification, ECU55 for steering justification, and ECU56 for mirror justification, it adjusts to the position corresponding to the notified user ID. Moreover, in an engine ECU 57 and ECT-ECU58, the suitable engine control or automatic gear change control based on the study result corresponding to the notified user ID will be performed.

[0044] Thus, user ID needs to be notified from a voice recognition unit 30 as a premise by which suitable control based on user ID is performed in each part. Therefore, processing concerning the user specification in this voice recognition unit 30 is explained with reference to drawing 4 and 5.

[0045] If current supply is started and this processing begins, the count n of a check will be first reset to 0 (S110), and processing to which a voice guide is made to output from a loudspeaker 37 will be performed (S120). Here, the dialogue control section 32 directs that the predetermined contents of a guide (for example, "it is please about a user name") carry out [voice] a synthetic output in the speech synthesis section 33. After outputting a voice guide in S120, it judges [whether the PTT switch 36 was turned on in S130, and] whether it is no (were pushed?). This judgment is made by the control section

38.

[0046] And when the PTT switch 36 is turned on, it judges whether voice input occurs by (S130:YES) and S140 continuing. Although it shifts to S230 of (S140:YES) and drawing 5 when voice input occurs, the processing after these S230 is mentioned later.

[0047] On the other hand, when there is no voice input, it judges whether (S140:NO) and the PTT switch 36 were turned off (S150), and when the PTT switch 36 is turned off, it returns to (S150:YES) and S130. On the other hand, the PTT switch 36 is not turned off, that is, if it continues being in the turned-on condition (S150:NO), it will judge (whether predetermined time passed) for whether it is a time-out (S160).

[0048] In not being a time-out, it waits to return to (S160:NO) and S140 and to carry out voice input, but when predetermined time passes and it becomes a time-out, it shifts to (S160:YES) and S170, and the increment ($n=n+1$) of the count n of a check is carried out.

[0049] In addition, although there was a voice guide output (S120), when the PTT switch 36 is not turned on, it judges (whether predetermined time passed) for whether they are (S130:NO) and a time-out (S220), and when it is not a time-out, it returns to (S220:NO) and S130. On the other hand, when predetermined time passes and it becomes a time-out, it shifts to (S220:YES) and S170, and the increment ($n=n+1$) of the count n of a check is carried out.

[0050] After incrementing the count n of a check in S170, when the count n of a check judges whether the regular count N of an upper limit was exceeded and is not over the count N of an upper limit in S180 continuing, it returns to (S180:NO) and S120. That is, a voice guide output is performed again and it waits for the voice input from a user. On the other hand, when the count n of a check is over the count N of an upper limit (i.e., when only the count N of an upper limit performed the voice guide output and does not have **** and the voice input from a user from having waited for the voice input from a user, either), it shifts to (S180:YES) and S190, and user ID "1" is chosen. This user ID "1" is prepared in order that an unspecified user may use in common. Therefore, in the talk back performed in S200 continuing, synthesized speech which is referred to as "Making it a setup for unspecified users", for example is outputted from a loudspeaker 37, and it reports to a user.

[0051] And user ID "1" is notified from the dialogue control section 32 to multimedia ECU 10 (S210), and this manipulation routine is ended. Then, processing of S230 which shifts when there is affirmative judgment, i.e., voice input, in S140 mentioned above or subsequent ones is explained.

[0052] Recognition processing to the inputted voice is performed in S230. Although this speech recognition processing is performed in the speech recognition section 31, specifically, it collates to the acquired voice data using the dictionary data memorized. And it will output to the dialogue control section 32 by making into a recognition result the high order comparison object pattern which became settled by the collating result.

[0053] In S240 continuing, the talk back of the recognition result is carried out. That is, the result which the dialogue control section 32 controlled the speech synthesis section 33, and has recognized is made to output from a loudspeaker 37 with voice. Then, it judges whether it is right recognition in S250. This is judged according to the directions from a user. That is, although a user does voice input of his user name, he judges whether the contents by which the talk back was carried out are the same as the user name which carried out voice input. And when it is right recognition, if it is the wrong recognition, it is possible [it / a user does voice input of "yes" from a microphone 35, and] to be made to carry out voice input of "no." Of course, you may make it input these directions through the actuation switch group 8.

[0054] And if it is the mistaken recognition (S250:NO), it will return to S170 of drawing 2, but in being right recognition, it shifts to (S250:YES) and S260, and decides a recognition result. And in S270-S360 continuing, settled contents, i.e., the processing which specifies user ID based on a user ID name, are performed.

[0055] Specifically, the user name by which voice input was carried out first judges whether it is a new thing. As mentioned above, the character-string data of the user name corresponding to user ID are memorized as information about a user by storage section 32a in the dialogue control section 32. Of course, the user name needs to be set up to no user ID. Moreover, as mentioned above, since user ID "1"

is wide opened for the unspecified user, it corresponds and does not memorize a user name. It follows, for example, there is user ID of 1-10, and if it is being able to perform registration of a user name about nine user ID of 2-10, if it is either, negative judgment will be carried out in S270, and if the user names by which voice input was carried out are not any, either, affirmative judgment of them will be carried out to the inside of the nine user names in S270.

[0056] If the user name by which voice input was carried out is either of the nine user names (S270:NO), it will be decided that it will be the user ID corresponding to the user name (S280), and the user ID will be notified to multimedia ECU 10 (S290). This manipulation routine is ended after this notice. On the other hand, if the user names by which voice input was carried out are not any of Uchi of the nine user names, either (S270:YES), it will judge continuously whether new registration is possible (S300). For example, if registration of a user name can be performed about nine user ID of 2-10, it will judge by whether user name registration is carried out about all the nine user ID. When new registration can be carried out, the user name by which voice input was carried out is newly registered to the user ID which is not registered [(S300:YES) and / its]. In addition, what is necessary is just to make choosing the one where the number of them is younger etc., when there is two or more non-registered user ID. And the talk back of the newly registered purport is carried out, and it reports to a user (S320). This information is made to output from a loudspeaker 37 in "user name OOO was newly registered" etc. and synthesized speech. Moreover, new registration is notified to multimedia ECU 10 (S330). This notice is performed including the newly registered user ID.

[0057] On the other hand, when new registration cannot be carried out, (S300:NO) and the same processing as S190-S210 which were mentioned above are performed. That is, synthesized speech which is referred to as "Making it a setup for unspecified users since new registration cannot be performed", for example is outputted from a loudspeaker 37, and the talk back which chooses the user ID "1" which shifted to S310 and was prepared for [unspecified] users, and performs it in S320 continuing reports to a user. And user ID "1" is notified from the dialogue control section 32 to multimedia ECU 10 (S330), and this manipulation routine is ended.

[0058] Thus, since user ID is notified when processing of S290 or S360 is performed, by navigation control-section 10a of the multimedia ECU 10 which received this notice, it reads from the storage section which does not illustrate the contents of a setting corresponding to the notified user ID, and it sets up so that navigation control based on those read contents of a setting can be performed. Therefore, when the user ID according to the user name into which self is registered in S290 is notified, control which used the voice guidance conditions and screen-display language which were being used last time, a registration point, etc. can be performed.

[0059] Moreover, since the directions considered as a setup corresponding to the notified user ID are taken out from multimedia control-section 10b of multimedia ECU 10 to each ECUs 51-58, in each ECUs 51-58 which received the directions, it reads from the storage section which does not illustrate the contents of a setting corresponding to the notified user ID, and correspondence processing based on the read contents of a setting is performed. Therefore, when the user ID according to the user name into which self is registered in S290 is notified, a setup only for itself is made in each ECUs 51-58. That is, in TEL-ECU51, the telephone directory function only for itself can be used, and a ringer tone setup for itself is made. Moreover, in the TV tuner 52 or audio equipment 53, it is set as the presetting memory for itself, and the broadcasting station used further at the end last time is chosen automatically. Moreover, it is automatically adjusted to the position suitable for itself by ECU54 for sheet justification, ECU55 for steering justification, and ECU56 for mirror justification. Moreover, in an engine ECU 57 and ECT-ECU58, the suitable engine control or automatic gear change control corresponding to a peculiarity of operation of it is performed.

[0060] Moreover, after carrying out a setup for user ID "1", for example as a default setup, modification or the contents of study of the various setup is made memorized in navigation control-section 10a of multimedia ECU 10 from now on corresponding to the user ID for new registration to which it was notified, when the notice of the new registration in S330 is given. Moreover, similarly, the newly registered user ID is specified also from multimedia control-section 10b of multimedia ECU 10 to each

ECUs 51-58, and directions of new registration are made to them. Therefore, after carrying out a setup for user ID "1" as a default setup, modification or the contents of study of the various setup is made memorized about Self ECU from now on in each ECUs 51-58 which received the directions corresponding to the user ID for new registration to which it was notified.

[0061] The following effectiveness is demonstrated in the multi-media system of this example explained above. That is, since what is necessary is just to carry out voice input of its user name which the user has registered in order to consider as the thing only for [a navigation function or the contents of processing in various kinds 51-ECUs 58] themselves, user specification can be performed very simple. As compared with the conventional technique, it is as follows concretely. For example, in what is registered by the pattern selection key etc., after others registered freely another pattern into the number which had to try all the key strokes when he had forgotten the number which he registered, and he registered, when he tries to use after that, it will become another pattern setup. Moreover, if it is going to correspond to many users, the pattern selection key for the user must be prepared, and a limit of an installation etc. also must be taken into consideration. Moreover, in a setup based on ID of the key which unlocked the door of a car, when two or more users use the same key, a setup for every user cannot be realized. Moreover, since a setup is decided by the key which unlocked the door, when a spare key is used, for example, it may not become a setup which a user desires.

[0062] On the other hand, since according to the user specification technique like this example it can be set as a user name corresponding to the user ID which the user registered as its identifier etc. is uttered, if compared with the conventional thing which keeps only the number in mind, it is very rare [it] to use the user name for others in forgetting a user name **** accidentally. Moreover, even if it is the case where it is targeted at many users, there is no hard increment like an above-mentioned pattern selection key, and its data of the user name to register only increase. Furthermore, it does not produce un-arranging ["it cannot be made a desired setup"], when the key of the case where two or more users use the same key, or a reserve is used, either. That is, the problem in the case of the conventional technique originated in not specifying the user directly and specifying indirectly through ID of a key, and is generated. Since the user was certainly specified to it based on the information (that is, user name in which a user does voice input) acquired from the user in a utilization time point itself in the case of this example, these problems are solvable.

[0063] In addition, it being equipped with an input unit like a ten key, for example, although the above-mentioned pattern selection key explained that the increment in the number of keys itself became a problem with the increment in the number of users since one ID was a thing corresponding to one key, for example, deciding the ID number whose user is about 4 figures to be arbitration, and registering is also considered. However, ID which the activity of pushing 4 times is needed, and can register a ten key in this case serves as only a figure. With, of course devising an input procedure, although the kana input using a ten key is also possible, it becomes a very complicated input. If it is the contents which can carry out voice input that what is necessary is just to carry out voice input of the user name simply if it is the case of this example, since anythings can serve as a user name also about such a point, it is not restricted to a figure.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the outline configuration of the multi-media system of an example.

[Drawing 2] It is the block diagram showing the outline configuration of a voice recognition unit.

[Drawing 3] It is the block diagram showing the outline configuration of the speech recognition section and a dialogue control section in a voice recognition unit.

[Drawing 4] It is a part of flow chart which shows the processing which a voice recognition unit performs.

[Drawing 5] It is a part of flow chart which shows the processing which a voice recognition unit performs.

[Description of Notations]

4 -- Position transducer 6 -- Map data input machine
8 -- Actuation switch group 10 -- Multimedia ECU
10a -- Navigation control section 10b -- Multimedia control section
12 -- Touch switch 13 -- Display ECU
14 -- LCD monitor 15 -- Display with a touch switch
18 -- Gyroscope 20 -- Distance robot
22 -- GPS receiver 30 -- Voice recognition unit
31 -- Speech recognition section 31a -- Collating section
31b -- Dictionary section 32 -- Dialogue control section
32a -- Storage section 32b -- Input section
32c -- After-treatment section 33 -- Speech synthesis section
34 -- Voice input section 35 -- Microphone
36 -- PTT switch 37 -- Loudspeaker
38 -- PTT switch control section 40 -- Communication link Rhine
51 -- TEL-ECU 52 -- TV tuner
53 -- Audio equipment 54 -- ECU for sheet justification
55 -- ECU for steering justification 56 -- ECU for mirror justification
57 -- Engine ECU 58 -- ECT-ECU

[Translation done.]

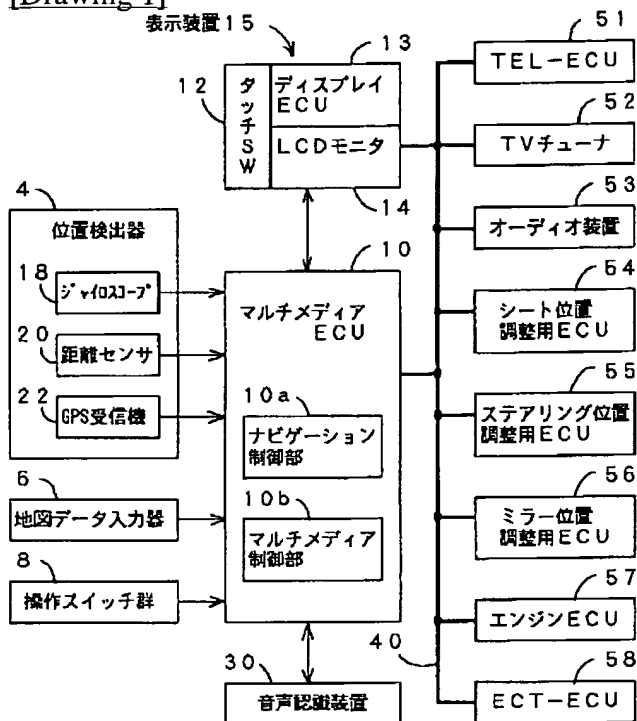
* NOTICES *

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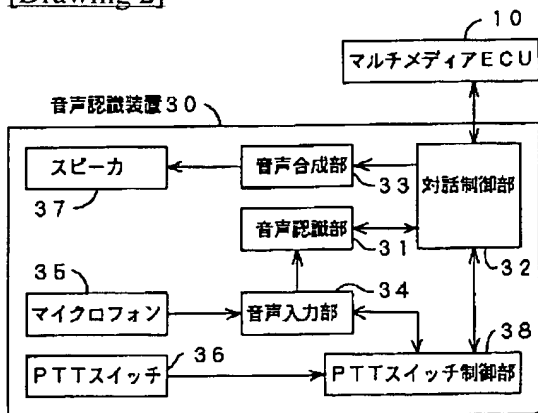
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

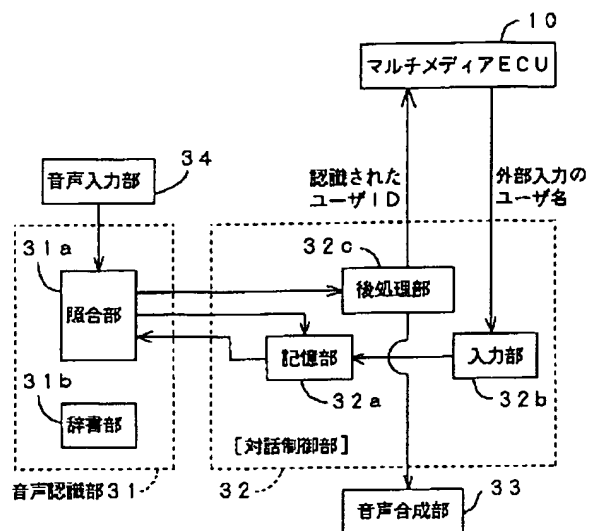
[Drawing 1]



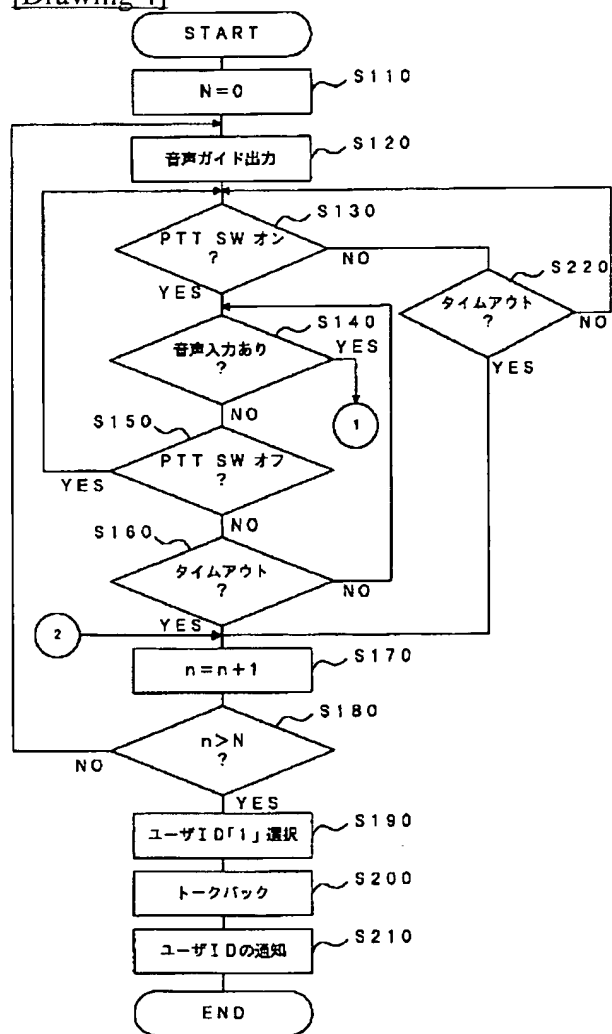
[Drawing 2]



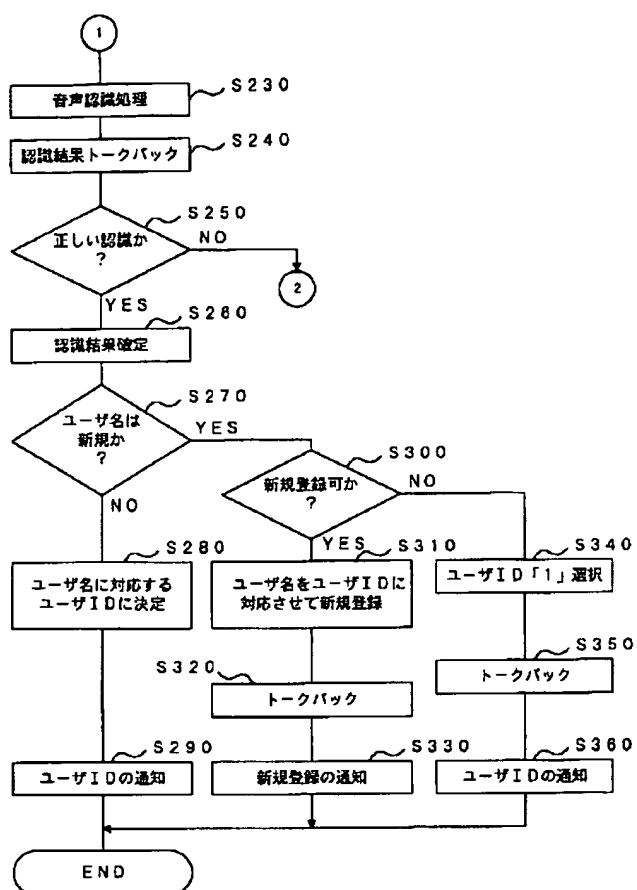
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]

PATENT ABSTRACTS OF JAPAN

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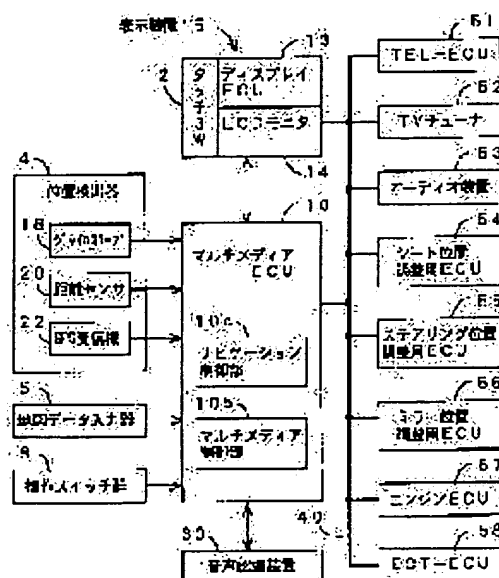
(72)Inventor : SOFUE EIJI

(54) INFORMATION PROCESSOR

(57)Abstract:

PROBLEM TO BE SOLVED: To produce the satisfactory results at the time of execution of prescribed information processing based on the learning result corresponding to a specified user by surely specifying the user based on information obtained from the user himself or herself at the time of use.

SOLUTION: Preliminarily registered user names and user IDs are stored in a voice recognition device 30 correspondingly to each other, and the user ID corresponding to a user name which a user inputs with a voice is sent to a multimedia ECU 10 if this user name is preliminarily registered. An indication is so issued that a navigation control part 10a and each ECUs 51 to 58 are set based on the user ID. For example a preset memory of an audio device a sheet position, a steering position, a mirror position, etc., are so set that they are matched with this user.



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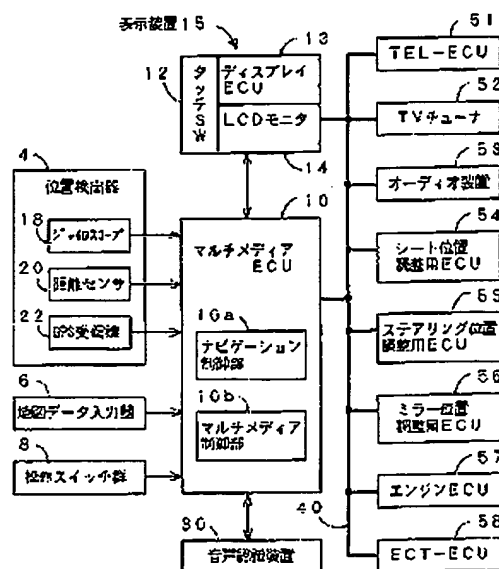
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(54) 【発明の名称】 情報処理装置

(57) 【要約】

【課題】 利用時点における利用者自身から得られる情報に基づいて利用者を実際に特定することによって、その特定された利用者に対応する学習結果に基づく所定の情報処理が実行された場合の実効を図る。

【解決手段】 音声認識装置30には、予め登録したユーザ名とユーザIDとが対応して記憶されており、利用者が音声入力したユーザ名が予め登録されているものであれば、そのユーザ名に対応するユーザIDがマルチメディアECU10へ送られる。そして、ナビゲーション制御部10a及び各ECU51～58においてユーザIDに基づく設定となるよう指示が出される。例えばオーディオ装置のプリセットメモリやシート位置・ステアリング位置・ミラー位置などがその利用者にマッチした設定にされる。



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【特許請求の範囲】

【請求項1】 音声を入力するための音声入力手段と、
該音声入力手段を介して入力された音声、予め辞書手
段に記憶されている複数の比較対象パターン候補と比較
して一致度合いの高いものを認識結果とする認識手段と、
該認識手段による認識結果を、予め登録されている利用
者毎の識別情報と比較することによって利用者を特定す
る利用者特定手段と、
複数の利用者毎に対応した学習結果を記憶しておく記憶
手段と、

前記利用者特定手段によって利用者が特定された場合に
は、その特定された利用者に対応する学習結果を前記記
憶手段から読み出し、その読み出した学習結果に基づ
き所定の情報処理を実行する処理実行手段とを備えるこ
と、

を特徴とする情報処理装置。

【請求項2】 請求項1に記載の情報処理装置におい
て、

前記処理実行手段が実行する所定の情報処理は、前記音
声入力手段及び認識手段を用いた音声認識処理であるこ
と、

を特徴とする情報処理装置。

【請求項3】 請求項1に記載の情報処理装置におい
て、

前記処理実行手段が実行する所定の情報処理は、ナビゲ
ート処理であり、

前記音声入力手段は、少なくとも前記処理実行手段がナビ
ゲート処理をする上で指定される必要のある所定のナビ
ゲート処理関連データの指示を利用者が音声にて入力
するために用いられており、

前記音声認識手段による認識結果に基づいて、前記処理
実行手段がナビゲート処理を実行すること、
を特徴とする情報処理装置。

【請求項4】 請求項1～3のいずれかに記載の情報処
理装置において、

さらに、前記音声入力手段を介して入力された利用者音
声の音響的特徴量を抽出する特徴量抽出手段を備え、
前記利用者特定手段は、前記認識手段による認識結果を
予め登録されている利用者毎の識別情報と比較すると共
に、前記特徴量抽出手段によって抽出された音響的特徴
量を予め登録されている利用者毎の音響的特徴量と比較
することによって利用者を特定すること、
を特徴とする情報処理装置。

【請求項5】 所定の画像読み込み範囲内におかれた指
紋を読み込むための指紋読み込み手段と、
該指紋読み込み手段を介して読み込んだ指紋の画像を、
予め登録されている利用者毎の指紋の登録画像と比較す
ることによって利用者を特定する利用者特定手段と、
複数の利用者毎に対応した学習結果を記憶しておく記憶
手段と、

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前記利用者特定手段によって利用者が特定された場合に
は、その特定された利用者に対応する学習結果を前記記
憶手段から読み出し、その読み出した学習結果に基づ
き所定の情報処理を実行する処理実行手段とを備えるこ
と、

を特徴とする情報処理装置。

【請求項6】 請求項5に記載の情報処理装置におい
て、

前記指紋読み込み手段が指紋を読み込むための所定の画
像読み込み範囲は、車両のステアリングホイールに設け
られており、利用者が当該ステアリングホイールを握っ
た際に指紋読み込みが可能にされていること、

を特徴とする情報処理装置。

【請求項7】 請求項1～6のいずれかに記載の情報処
理装置において、

前記利用者特定手段は、

前記利用者を特定する前に、報知手段を介して、特定候
続の利用者を識別可能な情報を報知し、

該報知手段によって利用者を識別可能な情報が報知され
た後に所定の確定指示がなされた場合には、前記特定候
続の利用者を特定利用者として確定すること、

を特徴とする情報処理装置

【請求項8】 請求項1～7のいずれかに記載の情報処
理装置において、

車両に搭載されていることを特徴とする情報処理装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、利用者の過去の利
用状況に基づく学習結果を利用して適切な情報処理を行
う情報処理装置に関し、特に複数の利用者が同一の情報
処理装置を利用する場合に、利用者の特定を簡易に行え
るようにした技術に関する。

【0002】

【従来の技術】従来より、例えば複数の利用者が同一の
車両を利用することを前提とし、その車載装置に関する
設定などをプリセットされた状態に自動的にすること
で、利便性を向上させる技術が知られている。例えば、
シートポジションは利用者の体型などによってかなり異
なるため、まずマニュアル操作で自分に最も適したポジ
ションに調整する。そして、その調整したポジションを
例えば1～3の番号のパターンセレクトキーのいずれか
に対応付けて登録しておき、次回の利用時にその登録し
たパターンセレクトキーを操作すると、プリセットされ
た所望のシートポジションに自動的に調整されるという
ものである。また、ミラーのポジションについても利用
者の体型や上述のシートポジションによって最適位置が
異なってくるので、同様に登録しておくことと便利である。
但し、このようなパターンセレクトキーを用いた場合
は、自分の登録した番号を忘れると全てのキー操作を試
みなければならない、また、自分が登録した番号に他人が

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勝手に別のパターンを登録してしまうと、その後に自分が利用しようとした場合、別のパターン設定になっているため、所望のシートポジションやミラーポジションにならないこととなる。

【0003】これに対して、いわゆるキーレスエントリ装置を採用した車両においては、キーを数値類用意し、ドアをアンロックしたキーのIDに基づいて例えばオーディオ装置のプリセットメモリを切り替える技術が実用化されている。したがって、同一車両を利用する複数人の利用者がそれぞれ別のキーを所有し、そのキーにてアンロックすれば、自分にマッチした各種設定を実現することができる。

【0004】

【発明が解決しようとする課題】しかしながら、このようにキーのIDに基づく設定では、複数の利用者が同じキーを利用する場合は利用者毎の設定は実現できない。また、ドアをアンロックしたキーによって設定が決まってしまうので、例えば予備のキーを使った場合には、利用者の望む設定とならない可能性もある。

【0005】これらの問題は、利用者を直接特定しているのではなく、キーのIDを介して間接的に特定していることに起因して発生している。そこで、本発明は、利用時点における利用者自身から得られる情報に基づいて利用者を確実に特定することによって上述の問題を解決し、その特定された利用者に対応する学習結果に基づく所定の情報処理が実行された場合の実効を図ることを目的とする。

【0006】

【課題を解決するための手段及び発明の効果】上記目的を達成するためになされた請求項1に記載の情報処理装置によれば、記憶手段には複数の利用者毎に対応した学習結果が記憶されており、利用者特定手段によって利用者が特定された場合には、処理実行手段が、その特定された利用者に対応する学習結果を記憶手段から読み出し、その読み出した学習結果に基づく所定の情報処理を実行する。したがって、例えば、車両のシートポジションやミラーポジションを自動調整する装置として適用した場合には、利用者毎に最も適したポジションに調整されるため、利便が向上する。

【0007】そして、本発明の利用者特定手段は、次のように利用者を特定する。つまり、音声入力手段を介して入力された音声を、予め辞書手段に記憶されている複数の比較対象パターン候補と比較して一致度合の高いものを認識結果とした後、この認識結果を予め登録されている利用者毎の識別情報と比較することによって利用者を特定する。ここで、利用者のIDとして利用者自身の名前を登録するようにすれば、利用者は自分の名前を発声するだけでよく、非常に簡便に利用者特定ができる。

【0008】従来の手法と比較する。例えばパターンセレクトキーなどによって登録しておくものは、自分の

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登録した番号を忘れると全てのキー操作を試みなければならない。また、自分が登録した番号に他人が勝手に別のパターンを登録してしまうと、その後に自分が利用しようとした場合、別のパターン設定になってしまう。また、多数の利用者に対応しようとする、その利用者分のパターンセレクトキーを準備しなくてはならず設置場所などの制限も考慮せざるを得ない。また、車両のドアをアンロックしたキーのIDに基づく設定では、複数の利用者が同じキーを利用する場合は利用者毎の設定は実現できない。また、ドアをアンロックしたキーによって設定が決まってしまうので、例えば予備のキーを使った場合には、利用者の望む設定とならない可能性もある。

【0009】これに対して、本発明の利用者特定手法によれば、利用者が登録した利用者識別情報として例えば自分の名前などを発声するようにしているので、その登録した識別情報を忘れてしまったり他人の登録した識別情報を誤って使用してしまうことは極めて少ない。また、多数の利用者を対象とする場合であっても、上述のパターンセレクトキーのようなハード的な増加はなく、登録する利用者識別情報のデータが増えるだけである。さらに、複数の利用者が同じキーを利用する場合や予備のキーを使った場合の「所望の設定にすることができない」という不都合も生じない。つまり、従来手法の場合の問題は、利用者を直接特定しているのではなくキーのIDを介して間接的に特定していることに起因して発生している。それに対して、本発明では、利用時点における利用者自身から得られる情報に基づいて利用者を確実に特定するようにしたため、これらの問題が解決でき、その特定された利用者に対応する学習結果に基づく所定の情報処理が実行された場合の実効を図ることができるのである。

【0010】なお、上述のパターンセレクトキーは1つのキーに1つのIDが対応するものであるため、利用者数の増加に伴ってキー数自体の増加が問題になると説明したが、例えばテンキーのような入力装置を備え、例えば利用者が4桁程度のID番号を任意に決めて登録しておくようにすることも考えられる。しかし、この場合にはテンキーを4回押すという作業が必要となり、また登録できるIDが数字だけとなる。もちろん入力手順を工夫することでテンキーを用いた仮名入力も可能ではあるが、非常に煩雑な入力作業となる。このような点についても、本発明の場合であれば、単純に利用者識別情報を発声するという動作だけでよく、また発声できる内容であれば、どのようなものでも識別情報となり得るので、数字に限られることはない。

【0011】なお、情報処理装置としての適用先としては、種々考えられる。そのいくつかについて説明する。例えば、処理実行手段が実行する所定の情報処理が音声入力手段及び認識手段を用いた音声認識処理である音声認識装置として実現することもできる。利用者毎に音声

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認識上の特徴があるため、これを学習しておけば、次の音声認識の際、認識率の向上などの効果を得られる。この場合には、音声認識装置として本来備えている構成のみで実現できる。

【0012】また、情報処理装置をナビゲーション装置として実現することもできる。この場合には、処理実行手段が実行する所定の情報処理はナビゲート処理である。そして、音声入力手段は、少なくとも処理実行手段がナビゲート処理をする上で指定される必要のある所定のナビゲート処理関連データの指示を利用者が音声にて入力するために用いられ、音声認識手段による認識結果に基づいて、処理実行手段がナビゲート処理を実行する。目的地、登録地点、音声案内の条件、あるいは画面表示の言語（日本語あるいは英語）などは利用者毎の設定が可能であるため、これらの設定履歴に基づき、最適な利用環境に即座にできれば利便が向上する。また、この場合も、音声にて目的地の設定などのナビゲート処理関連データを入力することを前提としているため、利用者特定のために新規な構成を追加する必要はない。

【0013】それ以外にも、上述したシートポジションやミラーポジションの調整、さらにはステアリングポジションの調整を実行する装置としても実現できる。さらにはオーディオ装置のプリセットメモリの切り替えはもちろん、エンジン制御装置や自動変速制御装置などにも適用できる。アクセルの踏み込み具合なども利用者毎に特徴があり、これらの違いに応じて適切なエンジン制御ができるようにするためには、学習結果に基づくのが好ましいからである。

【0014】また、これらの機能は単独で実現してもよいが、複数の機能を統合した装置として実現してもよい。特に車載装置としては上述の複数の装置が車内LAN等で相互に通信可能に構成されることも多いので、システムとして構成し、各装置において、特定した利用者毎の設定ができるようにしておくことが便利である。

【0015】以上の説明では、利用者が利用者識別情報を音声入力することによって、利用者を特定していた。この場合は主に利用者特定のために利用者が行うべき動作を簡便にする点に着目しているため、例えば他人が勝手に自分の利用者識別情報を音声入力した場合であっても自分用の学習結果が呼び出されてしまう。さらには、その他人の学習結果に更新されてしまうと、その後、再度自分が利用する場合に所望の処理が実行されないこととなる。したがって、この点を鑑み次のような工夫をすることもできる。つまり、音声入力手段を介して入力された利用者音声の音響的特徴量を抽出し、利用者特定の際、この抽出された音響的特徴量と予め登録されている利用者毎の音響的特徴量との比較結果にも基づくようにする。このようにすれば、たとえ他人が自分の利用者識別情報を音声入力したとしても、自分の学習結果が勝手に呼び出されたり更新されたりすることはなくセキュリ

ティ面でも効果的である。

【0016】ところで、上述の音響的特徴量のように、利用者のユニークな身体的特徴に基づくという観点からすれば、例えば指紋を識別して利用者を特定することもできる。つまり、所定の画像読み込み範囲内におかれた指紋を読み込み、その読み込んだ指紋の画像を、予め登録されている利用者毎の指紋の登録画像と比較することによって利用者を特定するのである。特定した後の処理は、上述した音声による場合と同様である。つまり、記憶手段には複数の利用者毎に対応した学習結果が記憶されており、処理実行手段が、その特定された利用者に対応する学習結果を記憶手段から読み出し、その読み出した学習結果に基づき所定の情報処理を実行する。

【0017】指紋に基づく場合には、利用者が自分の指を所定の画像読み込み範囲に持っていった指紋を読み取らせる必要があるため、例えば、情報処理装置を車両に搭載する場合には、その所定の画像読み込み範囲を、車両のステアリングホイールに設け、利用者がステアリングホイールを握った際に指紋読み込みが可能に構成することが好ましい。このように、指紋による利用者特定の場合にも、利用者を確実かつ簡便に特定できると共に、セキュリティ面でも効果的である。

【0018】なお、どのように利用者特定をする場合であっても、利用者特定手段は、利用者を特定する前に、報知手段を介して、特定候補の利用者を識別可能な情報を報知し、その報知手段によって利用者を識別可能な情報が報知された後に所定の確定指示がなされた場合に特定候補の利用者を特定利用者として確定するようにしてもよい。特に、音声により利用者識別情報を入力させる場合には、その認識精度の点から100%とは言えないこともあるので、最終的には利用者による確認を得ることが好ましい。

【0019】この利用者を識別可能な情報の報知に関しては、例えば所定の音声発生装置から認識結果の内容を音声にて出力することにより行うことが考えられる。カーナビゲーションシステムなどの車載機器用として用いる場合には、音声で出力されれば、ドライバーは視点を表示装置にずらしたりする必要がないので、安全運転のより一層の確保の点では有利であると言える。但し、音声出力に限定されるものではなく、画面上に文字または記号を表示できる表示装置に、認識結果の内容を、文字または記号による画像にて表示することにより行ったり、音声及び画像の両方にて報知するようにしてもよいし、それら以外の報知の手法を採用してもよい。車載機器として適用する場合に音声出力が有利であることを述べたが、もちろん車両が走行中でない状況もあるので、音声及び画像の両方で報知すれば、ドライバーは表示による確認と音声による確認との両方が可能となる。

【0020】また、所定の確定指示としては、やはり音声にて「はい」といったような肯定的内容を示す言葉を

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入力したり、あるいは所定の操作スイッチを操作するといったことが考えられる。なお、本発明の情報処理装置の適用先としては、上述した車載の装置だけでなく、例えば携帯型ナビゲーション装置やあるいは、パーソナルコンピュータの設定などに用いてもよい。

【0021】

【発明の実施の形態】以下、本発明が適用された実施例について図面を用いて説明する。なお、本発明の実施の形態は、下記の実施例に何ら限定されることなく、本発明の技術的範囲に属する限り、種々の形態を採り得ることは言うまでもない。

【第1実施例】図1は実施例としてのマルチメディアシステムの概略構成を示すブロック図である。本マルチメディアシステムは、車両に搭載され、地図データを用いた地図表示や走行案内などのナビゲーションをはじめとして、その他のメディアを用いた画像表示や電話装置あるいはオーディオ装置などについても総合的に制御あるいは情報処理するようなシステムとして構成されている。

【0022】具体的には、マルチメディアECU10と、タッチスイッチ付き表示装置15と、TEL-ECU51と、TVチューナ52と、オーディオ装置53と、シート位置調整用ECU54と、ステアリング位置調整用ECU55と、ミラー位置調整用ECU56と、エンジンECU57と、ECT-ECU58とが、通信ライン40を介して相互に接続されて構成されている。

【0023】マルチメディアECU10（本発明の処理実行手段に相当）には、位置検出器4、地図データ入力器6、操作スイッチ群8が接続され、これらからのデータを入力すると共に、音声認識装置30との間でもデータの入出力ができるようにされている。また上述したタッチスイッチ付き表示装置15との間でもデータの入出力ができるようにされている。なお、マルチメディアECU10はナビゲーション制御部10a及びマルチメディア制御部10bを備えており、これらはいずれも、周知のCPU、ROM、RAM、I/O及びこれらを接続するバスラインなどを備えた通常のコンピュータとして構成されている。そして、ナビゲーション制御部10aは、ナビゲーション関連の処理を実行する主体となり、マルチメディア制御部10bはそれ以外のメディア、具体的には、上述したTEL-ECU51、TVチューナ52、オーディオ装置53、シート位置調整用ECU54、ステアリング位置調整用ECU55、ミラー位置調整用ECU56、エンジンECU57及びECT-ECU58に関連する処理を実行する主体となる。

【0024】前記位置検出器4は、いずれも周知のジャイロスコープ18、距離センサ20、及び衛星からの電波に基づいて車両の位置を検出するGPS（Global Positioning System）のためのGPS受信機22を有している。これらのセンサ等18、20、22は各々が性質

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の異なる誤差を持っているため、複数のセンサにより、各々補間しながら使用するように構成されている。なお、精度によっては上述した内の一部で構成してもよく、更に、ステアリングの回転センサ、各駆動輪の車輪センサ等を用いてもよい。

【0025】地図データ入力器6は、位置検出の精度向上のためのいわゆるマップマッチング用データ、地図データ及び目印データを含む各種データを入力するための装置である。媒体としては、そのデータ量からCD-ROMやDVDを用いるのが一般的であるが、メモリーカード等の他の媒体を用いてもよい。

【0026】タッチスイッチ付き表示装置15は、画面を指でタッチすると画面縦横に所定本数走っている赤外線が遮断され、押されたエリアを特定してスイッチ機能を発揮するタッチスイッチ12と、表示装置全体の制御を司るディスプレイECU13と、LCDモニタ14とを備えている。LCDモニタ14はカラー表示が可能であり、その画面には、位置検出器4から入力された車両現在位置マークと、地図データ入力器6より入力された地図データと、更に地図上に表示する誘導経路や後述する設定地点の目印等の付加データとを重ねて表示することができる。これはナビゲーション装置としての使用方法であるが、例えばTVチューナ52によって選局されたチャンネルのテレビ映像なども表示できるようにされている。

【0027】また、操作スイッチ群8は、本実施例の場合には、タッチスイッチ付き表示装置15の周辺に（あるいは表示装置の筐体に一体的に）配置されたメカニカルなスイッチであり、主に利用するメディアの選択に用いられる。具体的には、ナビゲーション、電話、テレビ、オーディオ、エアコン、CDなどの各種メディアの中から所望のものを選択するためのスイッチである。

【0028】そして、音声認識装置30は、上記操作スイッチ群8が手動操作により目的地などを指示するために用いられるのに対して、利用者が音声で入力することによっても同様に目的地などを指示することができるようにするための装置である。音声認識装置30の構成について図2を参照してさらに説明する。

【0029】この音声認識装置30は、音声認識部31（本発明の認識手段に相当）と、対話制御部32と、音声合成部33と、音声入力部34と、マイクロホン35（本発明の音声入力手段に相当）と、PTT（Push-To-Talk）スイッチ36と、スピーカ37と、PTTスイッチ制御部38とを備えている。

【0030】音声認識部31は、音声入力部34から入力された音声データを、対話制御部32からの指示により入力音声の認識処理を行い、その認識結果を対話制御部32に返す。すなわち、音声入力部34から取得した音声データに対し、記憶している辞書データを用いて照合を行ない、複数の比較対象パターン候補と比較して一

致度の高い上位比較対象パターンを対話制御部32へ出力する。入力音声の中の単語系列の認識は、音声入力部34から入力された音声データを順次音響分析して音響的特徴量（例えばケプストラム）を抽出し、この音響分析によって得られた音響的特徴量時系列データを得る。そして、周知のDPマッチング法、HMM（隠れマルコフモデル）あるいはニューラルネットなどによって、この時系列データをいくつかの区間に分け、各区間が単語データとして格納されたどの単語に対応しているかを求める。

【0031】対話制御部32は、その認識結果及び自身が管理する内部状態から、音声合成部33への応答音声の発声指示や、システム自体の処理を実行するマルチメディアECU10に対して例えばナビゲート処理のために必要な目的地を通知して設定処理を実行させるよう指示する処理を実行する。このような処理が確定後処理であり、結果として、この音声認識装置30を利用すれば、上記操作スイッチ群8を手動しなくても、音声入力によりナビゲーションのための目的地の指示などが可能となるのである。また、ナビゲーションのための目的地指示ではなく、後述するように利用者が自分の利用者識別情報を音声入力した場合に、その利用者識別情報に基づく利用者特定もできるようにされている。

【0032】また音声入力部34は、マイクロフォン35にて取り込んだ周囲の音声をデジタルデータに変換して音声認識部31に出力するものである。本実施形態においては、利用者がPTTスイッチ36を押しながらマイクロフォン35を介して音声を入力するという使用方法である。具体的には、制御部38がPTTスイッチ36が押されたタイミングや戻されたタイミング及び押された状態が継続した時間を監視しており、PTTスイッチ36が押された場合には音声入力部34に対して処理の実行を指示する。一方、PTTスイッチ36が押されていない場合にはその処理を実行させないようにしている。したがって、PTTスイッチ36が押されている間にマイクロフォン35を介して入力された音声データが音声認識部31へ出力されることとなる。また、制御部38には音声入力部34での音声区間であるか雑音区間であるかの判定結果も入力するよう構成されており、例えば、PTTスイッチ36が押されたのに音声入力がなく、その状態が所定時間継続しているといったことも判断できるようにされている。

【0033】ここで、音声認識部31と対話制御部32について図3を参照してさらに説明する。図3に示すように、音声認識部31は照合部31a及び辞書部31bで構成されており、対話制御部32は記憶部32a、入力部32b及び後処理部32cで構成されている。対話制御部32の記憶部32aには、利用者に関する情報として、ユーザIDに対応するユーザを識別する文字列データが記憶されている。また、ユーザID毎に過去の学

習結果も記憶されている。ユーザを識別する文字列データとは例えばユーザの名前（本名でも良いし、ニックネームなどでも良い。）であり、これが本発明の利用者識別情報に相当する。ユーザIDは、本システム内において共通して用いられる情報であり、詳しくは後述するが、このユーザID毎に各ECU51～58での設定内容を登録できるようにされている。例えば1～10の番号を用いるなどすればよい。

【0034】音声認識部31においては、照合部31aが、音声入力部34から取得した音声データに対し、辞書部31b内に記憶されている辞書データを用いて照合を行なう。また、ユーザIDを特定する処理を実行する場合には、照合した結果に対応するユーザ特定用の文字列データが記憶部32aに記憶されているかどうかを判断し、記憶されていれば、そのユーザ特定用文字列データに対応するユーザIDを後処理部32へ出力する。また、入力部32bはマルチメディアECU10からのユーザIDを外部入力することができるようになっており、その入力したユーザIDも記憶部32aに記憶される。

【0035】そして、後処理部32cでは、例えば上記所定の確定指示がなされた場合にマルチメディアECU10へデータを送って所定の処理をするように指示する「確定後処理」を実行したり、あるいは音声合成部33へ音声データを送って発音させるように指示する処理を実行する。

【0036】図1の構成説明に戻り、TEL-ECU51は、電話機能を制御するための装置で、例えば電話帳機能として、過去に登録させた電話番号などを記憶しておくことができるようにされている。また、着信音などについても自分の好みに設定できるようにされている。そして、これらはユーザID毎にその設定内容が記憶されており、そのユーザIDを指定すれば、記憶させた電話番号を読み出すことができ、また記憶させた着信音での設定にすることができる。つまり、これらの設定内容は利用者毎に異なるため、利用者単位でその設定内容を登録しておき、必要なときにはそれが使用できるのが好ましいので、このようにしている。

【0037】また、TVチューナ52はテレビ放送信号を選局受信するための装置であり、いわゆるプリセットメモリに所定の周波数の放送信号を割り付けることができるようにされている。そして、このプリセットメモリについてもユーザID毎にその設定内容が記憶されており、そのユーザIDを指定すれば、記憶させたプリセットメモリの内容を読み出すことができる。つまり登録したプリセットメモリの番号を指定すれば、対応する放送局のテレビ放送信号を受信することができるようにされている。また、前回最後に使用していた放送局（あるいはその周波数）についても記憶されている。なお、この受信したテレビ映像は表示装置15のLCDモニタ1

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4に表示することができる。

【0038】オーディオ装置53についてもTVチューナ52と同様である。つまり、ユーザID毎にプリセットメモリの設定内容及び前回最後に使用した放送局を特定する情報が記憶されている。また、シート位置調整用ECU54、ステアリング位置調整用ECU55、ミラー位置調整用ECU56は、それぞれシートポジション（前後位置、高さ、背もたれの角度、ヘッドレストの位置など）、ステアリングポジション（チルト角や高さなど）、ミラーポジション（左右ドアミラー、バックミラーの角度など）を調整するための装置である。そして、これらのポジションについては、ユーザID毎にその設定内容が記憶されており、そのユーザIDを指定すれば、記憶させたポジションに調整することができるようにされている。

【0039】また、エンジンECU57、ECT-ECU58はそれぞれエンジン制御、自動変速制御を実行する電子制御装置として周知のものであるが、これらについても、ユーザID毎に過去の学習結果が記憶されており、そのユーザIDを指定すれば、その記憶させた学習結果に基づく適切なエンジン制御あるいは自動変速制御が実行できるようにされている。なお、これらの学習結果とは、主にユーザ毎にアクセル操作の違いを考慮した補正制御に係るものであり、例えばエンジン制御であれば、アクセルを踏み込む度合いが相対的に大きいユーザと小さいユーザとでは、同じアクセル開度であっても燃料噴射や点火時期についての制御内容も変える方が好ましい。また、自動変速制御においても、同じくアクセルを踏み込む度合いが相対的に大きいユーザと小さいユーザとでは、変速段の切替タイミングなどをについての制御内容も変える方が好ましい。

【0040】なお、マルチメディアECU10の内のナビゲーション制御部10aについて補足説明する。ナビゲーション機能を使用する場合には、例えばLCDモニタ14上に表示されるメニューから、ドライバーが操作スイッチ群8により、案内経路をLCDモニタ14に表示させるために経路情報表示処理を選択した場合、あるいは、音声認識装置30を介して希望するメニューをマイクロフォン35を介して音声入力することで、対話制御部32からナビゲーション制御部10aへ同様の指示がなされた場合、次のような処理を実施する。すなわち、ドライバーがLCDモニタ14上の地図に基づいて、音声あるいは操作スイッチ群8の操作によって目的地を入力すると、GPS受信機22から得られる衛星のデータに基づき車両の現在地が求められ、目的地と現在地との間に、ダイクストラ法によりコスト計算して、現在地から目的地までの最も短距離の経路を誘導経路として求める処理が行われる。そして、LCDモニタ14上の道路地図に重ねて誘導経路を表示し、交差点の拡大表示や曲がるべき交差点についての音声案内など、ドライ

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バーに適切なルートを案内する。このような誘導経路を求める計算処理や案内処理は一般的に良く知られた処理である。また、この音声案内の条件設定や画面表示する言語（例えば日本語あるいは英語など）については自由に設定できるようにされている。さらに、目的地やその他登録させておく便利な地点については、利用者が任意に地点登録させておくことができる。そして、これら目的地を含む登録地点や音声案内の条件などについては、ユーザID毎にその設定内容を記憶させておくことができるようにされており、そのユーザIDを指定すれば、記憶させた設定内容にて処理を実行できるようにされている。

【0041】次に、以上説明した構成を持つ本実施例のマルチメディアシステムの動作について説明する。まず、システム全体の動作を概略的に説明する。図示しないイグニッションスイッチが操作されて車載バッテリからの電源供給が開始すると、マルチメディアECU10、音声認識装置30をはじめとして、その他の各部において電源オンとなり、それぞれ初期設定処理などを実行する。そして、詳しくは後述するが、音声認識装置30においては、所定の利用者認識処理が実行され、その認識結果としてユーザIDがマルチメディアECU10に通知される。

【0042】マルチメディアECU10では、ナビゲーション制御部10aがその通知されたユーザIDに対応する設定内容を図示しない記憶部から読み出し、その読み出した設定内容に基づくナビゲーション制御が実行できるように設定する。つまり、上述した音声案内や画面表示言語や登録地点などを使用した制御が実行される状態とする。

【0043】また、マルチメディアECU10のマルチメディア制御部10bは、音声認識装置30から通知されたユーザIDを各ECU51～58に通知してそのユーザIDに対応した設定とるように指示する。したがって、その指示を受けた各ECU51～58では、通知されたユーザIDに対応する設定内容を図示しない記憶部から読み出し、その読み出した設定内容に基づく対応処理を実行する。具体的には、TEL-ECU51では、通知されたユーザIDに対応する電話帳機能を使用できるようになり、またユーザIDに対応して記憶されている着信音設定がなされる。また、TVチューナ52やオーディオ装置53においては、通知されたユーザIDに対応するプリセットメモリの設定にされ、さらに前回最後に使用した放送局が自動的に選択される。また、シート位置調整用ECU54、ステアリング位置調整用ECU55及びミラー位置調整用ECU56においては、通知されたユーザIDに対応するポジションに調整する。また、エンジンECU57やECT-ECU58においては、通知されたユーザIDに対応する学習結果に基づく適切なエンジン制御あるいは自動変速制御が実

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行されることとなる。

【0044】このように、ユーザIDに基づく適切な制御が各部において実行される前提として、音声認識装置30からユーザIDが通知される必要がある。したがって、この音声認識装置30におけるユーザ特定に係る処理について、図4、5を参照して説明する。

【0045】電源供給が開始されて本処理が開始すると、まず確認回数 n を0にリセットし(S110)、スピーカ37より音声ガイドを出力させる処理を行う(S120)。ここでは、対話制御部32が音声合成部33に、所定のガイド内容(例えば「ユーザ名をどうぞ」)を音声で合成出力するよう指示する。S120にて音声ガイドを出力した後は、S130にて、PTTスイッチ36がオンされたか(押下されたか)否かを判断する。この判断は制御部38で行われる。

【0046】そして、PTTスイッチ36がオンされた場合には(S130: YES)、続くS140で音声入力があるかどうかを判断する。音声入力がある場合には(S140: YES)、図5のS230へ移行するが、このS230以降の処理は後述する。

【0047】一方、音声入力がない場合には(S140: NO)、PTTスイッチ36がオフされたかどうかを判断し(S150)、PTTスイッチ36がオフされた場合には(S150: YES)、S130へ戻る。一方、PTTスイッチ36がオフされない、つまりオンされた状態のままであれば(S150: NO)、タイムアウトかどうか(所定時間が経過したかどうか)を判断する(S160)。

【0048】タイムアウトでない場合には(S160: NO)、S140へ戻って音声入力されるのを待つが、所定時間が経過してタイムアウトとなった場合には(S160: YES)、S170へ移行して確認回数 n をインクリメント($n=n+1$)する。

【0049】なお、音声ガイド出力(S120)があったにもかかわらずPTTスイッチ36がオンされない場合には(S130: NO)、タイムアウトかどうか(所定時間が経過したかどうか)を判断し(S220)、タイムアウトでない場合は(S220: NO)、S130へ戻る。一方、所定時間が経過してタイムアウトとなった場合には(S220: YES)、S170へ移行して確認回数 n をインクリメント($n=n+1$)する。

【0050】S170にて確認回数 n をインクリメントした後は、続くS180において、確認回数 n が規定の上限回数 N を超えたかどうかを判断し、上限回数 N を超えていない場合には(S180: NO)、S120へ戻る。つまり、再度音声ガイド出力を行ってユーザからの音声入力を待つ。一方、確認回数 n が上限回数 N を超えている場合、つまり上限回数 N だけ音声ガイド出力を行いユーザからの音声入力を待ったにもかかわらず、ユーザからの音声入力がなかった場合には(S180: YES)

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S)、S190へ移行して、ユーザID「1」を選択する。このユーザID「1」は不特定のユーザが共通して用いるために準備されたものである。したがって、続くS200にて実行するトークバックにおいては、例えば「不特定ユーザ用の設定にします」というような合成音声スピーカ37から出力して利用者に報知する。

【0051】そして、対話制御部32からマルチメディアECU10に対してユーザID「1」を通知し(S210)、本処理ルーチンを終了する。続いて、上述したS140にて肯定判断、すなわち音声入力があった場合に移行するS230の処理以降について説明する。

【0052】S230では、入力された音声に対する認識処理を行なう。この音声認識処理は音声認識部31にて実行されるのであるが、具体的には、取得した音声データに対して、記憶されている辞書データを用いて照合を行なう。そして、その照合結果により定まった上位比較対象パターンを認識結果として対話制御部32に出力することとなる。

【0053】続くS240では、その認識結果をトークバックする。つまり、対話制御部32が音声合成部33を制御し、認識した結果を音声によりスピーカ37から出力させる。その後、S250にて正しい認識であるかどうかを判断する。これは、利用者からの指示に応じて判断する。つまり、利用者は自分のユーザ名を音声入力するのであるが、トークバックされた内容がその音声入力したユーザ名と同じであるかどうかを判断する。そして正しい認識である場合には、利用者がマイクロフォン35から「はい」を音声入力し、間違った認識であれば「いいえ」を音声入力するようにしておくことが考えられる。もちろん、操作スイッチ群8を介してこれらの指示を入力するようにしてもよい。

【0054】そして、誤った認識であれば(S250: NO)図2のS170へ戻るが、正しい認識である場合には(S250: YES)、S260へ移行して認識結果を確定する。そして続くS270～S360において、確定した内容、つまりユーザID名に基づいてユーザIDを特定する処理を実行する。

【0055】具体的には、まず音声入力されたユーザ名が新規なものかどうかを判断する。上述したように対話制御部32内の記憶部32aには、利用者に関する情報として、ユーザIDに対応するユーザ名の文字列データが記憶されている。もちろん、全てのユーザIDに対してユーザ名が設定されている必要はない。また、上述したように、ユーザID「1」は不特定ユーザのために開放されているため、対応してユーザ名を記憶しておくことはない。したがって、例えば1～10のユーザIDがあり、2～10の9つのユーザIDについてはユーザ名の登録ができることとすると、音声入力されたユーザ名がその9つのユーザ名の内にいずれかであればS270にて肯定判断され、いずれでもなければS270にて肯

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定判断される。

【0056】音声入力されたユーザ名がその9つのユーザ名の内のいずれかであれば（S270:NO）、そのユーザ名に対応するユーザIDに決定し（S280）、そのユーザIDをマルチメディアECU10へ通知する（S290）。この通知後、本処理ルーチンを終了する。一方、音声入力されたユーザ名がその9つのユーザ名の内のいずれでもなければ（S270:YES）、続いて新規登録が可能かどうかを判断する（S300）。例えば2～10の9つのユーザIDについてはユーザ名の登録ができることとするのであれば、その9つのユーザID全てについてユーザ名登録がされているかどうかで判断する。新規登録できる場合には（S300:YES）、その未登録のユーザIDに対して、音声入力されたユーザ名を新規に登録する。なお、未登録のユーザIDが複数ある場合には、その内の番号の若い方を選択するなどすればよい。そして、新規登録した旨をトークバックして利用者に報知する（S320）。この報知は、例えば「ユーザ名〇〇〇を新規登録しました」などと合成音声にてスピーカ37から出力させる。また、マルチメディアECU10には新規登録の通知をする（S330）。この通知は、新規登録するユーザIDを含めて行う。

【0057】これに対して、新規登録できない場合には（S300:NO）、上述したS190～S210と同様の処理を実行する。すなわち、S310へ移行して不特定のユーザ用に準備されたユーザID「1」を選択し、続くS320において実行するトークバックでは、例えば「新規登録ができないので不特定ユーザ用の設定にします」というような合成音声スピーカ37から出力して利用者に報知する。そして、対話制御部32からマルチメディアECU10に対してユーザID「1」を通知し（S330）、本処理ルーチンを終了する。

【0058】このようにしてS290あるいはS360の処理が実行された場合には、ユーザIDが通知されるため、この通知を受けたマルチメディアECU10のナビゲーション制御部10aでは、通知されたユーザIDに対応する設定内容を図示しない記憶部から読み出し、その読み出した設定内容に基づきナビゲーション制御が実行できるように設定する。したがって、S290にて自己の登録されているユーザ名に応じたユーザIDが通知された場合には、前回使用していた音声案内条件や画面表示言語や登録地点などを使用した制御を実行することができる。

【0059】また、マルチメディアECU10のマルチメディア制御部10bから各ECU51～58へは、通知されたユーザIDに対応した設定とする指示が出されるため、その指示を受けた各ECU51～58では、通知されたユーザIDに対応する設定内容を図示しない記憶部から読み出し、その読み出した設定内容に基づき対

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応処理を実行する。したがって、S290にて自己の登録されているユーザ名に応じたユーザIDが通知された場合には、各ECU51～58において自分専用の設定がなされる。つまり、TEL-ECU51においては自分専用の電話帳機能を使用でき、自分用の着信音設定がなされる。また、TVチューナ52やオーディオ装置53においては、自分用のプリセットメモリに設定され、さらに前回最後に使用した放送局が自動的に選択される。また、シート位置調整用ECU54、ステアリング位置調整用ECU55及びミラー位置調整用ECU56によって、自分に合ったポジションに自動的に調整される。また、エンジンECU57やECT-ECU58においては、自分の運転の癖に対応した適切なエンジン制御あるいは自動変速制御が実行される。

【0060】また、S330における新規登録の通知がされた場合、マルチメディアECU10のナビゲーション制御部10aでは、例えばデフォルトの設定としてユーザID「1」用の設定をした後、今後、各種設定の変更あるいは学習内容を、通知された新規登録用のユーザIDに対応して記憶させていくこととなる。また、マルチメディアECU10のマルチメディア制御部10bから各ECU51～58へも同様に、新規登録するユーザIDを指定して新規登録の指示がなされる。したがって、その指示を受けた各ECU51～58では、自己ECUについて、例えばデフォルトの設定としてユーザID「1」用の設定をした後、今後、各種設定の変更あるいは学習内容を、通知された新規登録用のユーザIDに対応して記憶させていくこととなる。

【0061】以上説明した本実施例のマルチメディアシステムにおいては、次のような効果を発揮する。つまり、ナビゲーション機能あるいは各種ECU51～58での処理内容を自分専用のものとするために、利用者は登録している自分のユーザ名を音声入力するだけでよい。非常に簡単に利用者特定ができる。具体的に従来の手法と比較すると次のようになる。例えばパターンセレクトキーなどによって登録しておくものでは、自分の登録した番号を忘れると全てのキー操作を試みなければならず、また、自分が登録した番号に他人が勝手に別のパターンを登録してしまうと、その後自分が利用しようとした場合、別のパターン設定になってしまう。また、多数の利用者に対応しようとする、その利用者分のパターンセレクトキーを準備しなくてはならず設置場所などの制限も考慮せざるを得ない。また、車両のドアをアンロックしたキーのIDに基づく設定では、複数の利用者が同じキーを利用する場合は利用者毎の設定は実現できない。また、ドアをアンロックしたキーによって設定が決まってしまうので、例えば予備のキーを使った場合には、利用者の望む設定とならない可能性もある。

【0062】これに対して、本実施例のような利用者特定手法によれば、利用者が登録したユーザIDに対応す

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るユーザ名として例えば自分の名前などを発声するようにしておけるので、従来の単に番号だけを覚えておくものに比べればユーザ名を忘れてしまったり他人用のユーザ名を誤って使用してしまうことは極めて少ない。また、多数の利用者を対象とする場合であっても、上述のパターンセレクトキーのようなハード的な増加はなく、登録するユーザ名のデータが増えるだけである。さらに、複数の利用者が同じキーを利用する場合や予備のキーを使った場合の「所望の設定にすることができない」という不都合も生じない。つまり、従来手法の場合の問題は、利用者を直接特定しているのではなく、キーのIDを介して間接的に特定していることに起因して発生している。それに対して、本実施例の場合には、利用時点における利用者自身から得られる情報（つまり利用者が音声入力するユーザ名）に基づいて利用者を確実に特定するようにしたため、これらの問題が解決できるのである。

【0063】なお、上述のパターンセレクトキーは1つのキーに1つのIDが対応するものであるため、利用者数の増加に伴ってキー数自体の増加が問題になると説明したが、例えばテンキーのような入力装置を備え、例えば利用者が4桁程度のID番号を任意に決めて登録しておくようにすることも考えられる。しかし、この場合にはテンキーを4回押すという作業が必要となり、また登録できるIDが数字だけとなる。もちろん入力手順を工夫することでテンキーを用いた仮名入力も可能ではあるが、非常に煩雑な入力作業となる。このような点についても、本実施例の場合であれば、単純にユーザ名を音声入力するだけでよく、また音声入力できる内容であれば、どのようなものでもユーザ名となり得るので、数字に限られることはない。

【第2実施例】上述の第1実施例では、利用者がユーザ名を音声入力することによって、利用者を特定していた。この場合は主に利用者特定のために利用者が行うべき動作を簡便にする点に着目しているため、例えば他人が勝手に自分の利用者識別情報を音声入力した場合であっても自分用の学習結果が呼び出されてしまう。さらには、その他人の学習結果に更新されてしまうと、その後、再度自分が利用する場合に所望の処理が実行されないこととなる。

【0064】したがって、この点を鑑みれば、次のような工夫をすることもできる。つまり、対話制御部32の記憶部32aに、単にユーザ名の文字列データだけを記憶しておくのではなく、その利用者から音声入力されたユーザ名に対応する音響的特徴量までも記憶しておき、利用者特定の際、音声入力されたユーザ名の音響的特徴量自体を抽出し、その抽出された音響的特徴量と予め登録されているユーザ名の音響的特徴量と比較して一致しているかどうかを判断するのである。このようにすれば、たとえ他人が自分のユーザ名を音声入力したとして

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も、自分の学習結果が勝手に呼び出されたり更新されたりすることはなくセキュリティ面でも効果的である。

【第3実施例】上述の第2実施例では、音響的特徴量という利用者のユニークな身体的特徴に基づく利用者特定を行うこととした。この観点からすれば、例えば指紋を識別して利用者を特定することもできる。原理的には上述の第2実施例における音声の場合と同様に、利用者の指紋を登録しておき、利用者特定の際、利用者の指紋を読み込み、予め登録されている指紋の登録画像と比較することによって利用者を特定するのである。この場合は、利用者が自分の指を所定の画像読み込み範囲に持っていった指紋を読み取らせる必要があるため、例えば、その所定の画像読み込み範囲を、車両のステアリングホイールに設け、利用者がステアリングホイールを握った際に指紋読み込みが可能に構成することが好ましい。このように、指紋による利用者特定の場合にも、利用者を確実にかつ簡便に特定できると共に、セキュリティ面でも効果的である。

【その他】

（1）上述した第1実施例の場合には、新規に登録する場合にも、利用者がユーザ名を音声入力していた。しかし、操作スイッチ群8あるいは表示装置15のタッチスイッチ12を操作することによって、利用者がユーザ名を新規登録できるようにすることも考えられる。例えば新規登録モードにおいては、表示装置15のLCDモニタ14にテキスト入力画面が表示され、その画面上にてユーザ名の「読み」を入力する。このユーザ名の文字列データがマルチメディアECU10を介して音声認識装置30の対話制御部32へ送られ、対話制御部32では、図3に示すように入力部32bを介して入力したユーザ名を記憶部32aに記憶する。この場合も、スピーカ37を介してそのユーザ名をトークバックさせて利用者に報知し、利用者が確認の操作（例えば確認キーを押下）をすることによってそのユーザ名を正式に登録するようにした方が好ましい。

【0065】（2）また、上述の第1実施例の場合には、イグニッションスイッチがオンされた場合、つまりシステムが起動した時点において利用者特定の処理を実行することとしたが、例えば所定の操作をすることによって、システムが起動して通常の処理を実行している任意のタイミングにおいても利用者特定処理ができるようにしてもよい。例えばエンジンが停止せずにドライバを交替するような自体もあるため、その場合には、交替したドライバに合った設定にすべきだからである。

【0066】（3）また、上記第1実施例の場合には、音声認識装置30にて利用者特定をした後、その特定された利用者に対応した設定とする対象をマルチメディアECU10のナビゲーション制御部10a及び各種ECU51～58としたが、ナビゲーション制御部10a、各種ECU51～58の内のいずれか一つと組み合わせ

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てもよい。さらには、音声認識装置30自体も、利用者に応じた学習結果を用いるような設定にしてもよい。つまり、音声認識に際しては、利用者毎の特徴を学習しておくことで認識率の向上などの効果が得られるため、音声認識装置30単体としても実現は可能である。

【図面の簡単な説明】

【図1】 実施例のマルチメディアシステムの概略構成を示すブロック図である。

【図2】 音声認識装置の概略構成を示すブロック図である。

【図3】 音声認識装置における音声認識部と対話制御部の概略構成を示すブロック図である。

【図4】 音声認識装置が実行する処理を示すフローチャートの一部である。

【図5】 音声認識装置が実行する処理を示すフローチャートの一部である。

【符号の説明】

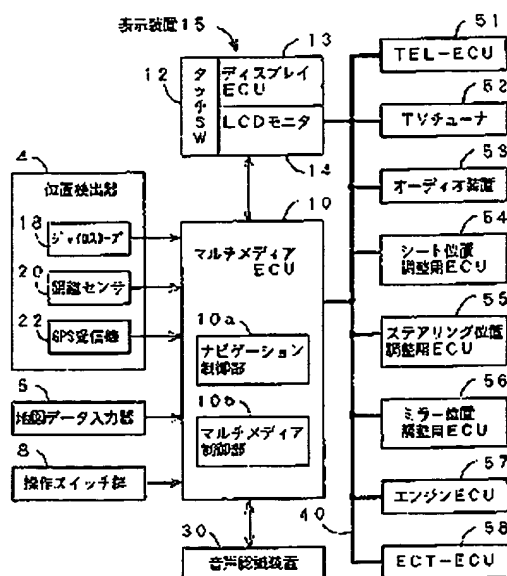
4…位置検出器 6…地図データ入力器
8…操作スイッチ群 10…マルチメディアECU
10a…ナビゲーション制御部 10b…マルチメディア制御部
12…タッチスイッチ 13…ディスプレイECU
14…LCDモニタ 15…表示装置
18…ジャイロセンサ 20…距離センサ
22…GPS受信機 30…音声認識装置
31…音声認識部 31a…照合部
31b…辞書部 32…対話制御部
32a…記憶部 32b…入力部
32c…後処理部 33…音声台成部
34…音声入力部 35…マイクロフォン
36…PTTスイッチ 37…スピーカ
38…PTTスイッチ制御部 40…通信ライン
51…TEL-ECU 52…TVチューナ
53…オーディオ装置 54…シート位置調整用ECU
55…ステアリング位置調整用ECU 56…ミラー位置調整用ECU
57…エンジンECU 58…ECT-ECU

* 14…LCDモニタ
イッチ付き表示装置
18…ジャイロセンサ
22…GPS受信機
装置
31…音声認識部
31b…辞書部
御部
32a…記憶部
32c…後処理部
34…音声入力部
36…PTTスイッチ
38…PTTスイッチ制御部
51…TEL-ECU
53…オーディオ装置
置調整用ECU
55…ステアリング位置調整用ECU
置調整用ECU
57…エンジンECU
* ECU

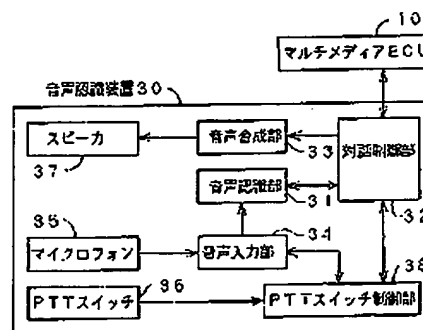
20

15…タッチス
20…距離セン
30…音声認識
31a…照合部
32…対話制
32b…入力部
33…音声台
35…マイクロ
37…スピーカ
40…通信ライ
52…TVチュ
54…シート位
56…ミラー位
58…ECT-

【図1】



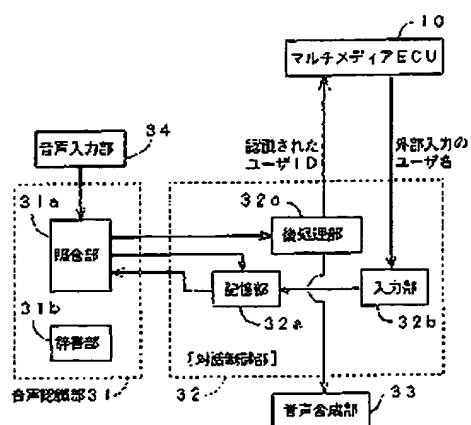
【図2】



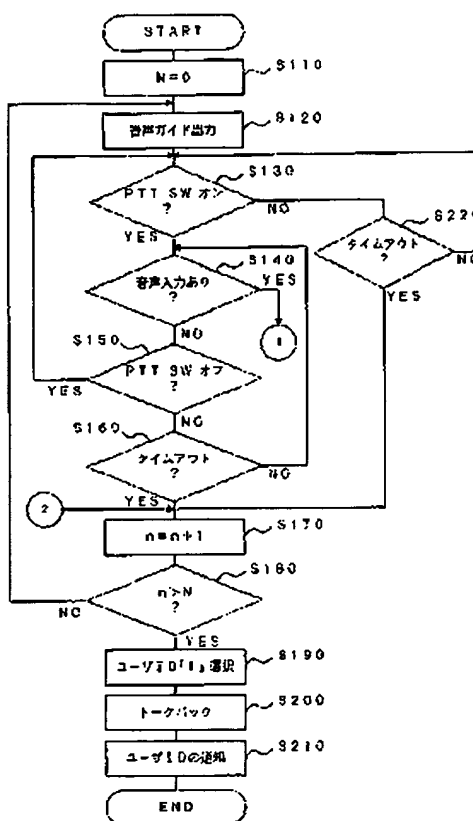
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【図3】



【图4】



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【図5】

